

Physical Health Monitoring in Individuals with Severe Mental Illness: An Audit in General Practice in North London

DANIELLE A ROBERTS*

GP Vocational Training Scheme, Imperial College Healthcare NHS Trust, London, UK

And

HERBERT P MWEBE†

Department of Mental Health & Social Work, Middlesex University, London, UK

Poor physical health is common in people with Severe Mental Illness (SMI). Two-thirds of deaths in SMI could be avoided if patients are offered prompt physical health screening for known risk factors. We aimed to identify SMI patients registered at a General Practice and audit their care in relation to physical health monitoring.

We included adult patients with coded diagnoses of SMI. We selected 18 best practice criteria for physical health monitoring, based on Quality and Outcomes Framework (QOF) indicators for mental health, NICE guidelines and other professional guidance. Data was obtained from electronic patient records and examined over a 12-month period.

Only 5 out of 18 best practice criteria achieved compliance above the expected standard of 70% (annual record of blood pressure, smoking, alcohol, medication review, prescription on repeat template). Care planning achieved 69%; and most of the remaining parameters (pulse, BMI, weight, QRISK2, serum lipids, glucose, dietary advice, physical activity, drug use) reached levels around 50-60%. Particularly low compliance (<40%) was found for ECG, pregnancy/contraception advice and medication side-effects.

There is definite room for improvement regarding physical health monitoring of SMI patients within general practice. We recommend increased attention to annual physical health checks, particularly cardiovascular risk factors, and the consistent offer of targeted interventions. Organisational financial incentives are also effective at increasing compliance results.

Keywords: severe mental illness, physical health monitoring, general practice, mental health professionals, cardiometabolic risk

* **Corresponding author:** Danielle Roberts. Email: d.roberts@imperial.ac.uk

† **Corresponding author:** Herbert P Mwebe. Email: h.mwebe@mdx.ac.uk

Background

Poor physical health and multi-morbidity is common in people with Severe Mental Illness (SMI). SMI is defined as any disorder of the mind which causes debilitating psychological problems of a degree and nature that the individual's ability to engage in functional and occupational activities is severely impaired (Public Health England, 2018). Individuals with SMI have shorter lifespans compared to those without mental illness (Rodgers et al., 2018). It is estimated that 2 in 3 deaths in this patient population are from physical illnesses that can be prevented (Mental Health Foundation, 2016). Thus, up to two-thirds of mortality in SMI is avoidable if patients are offered prompt physical health screening checks for known health risk factors (Silverwood et al., 2019).

Major causes of mortality and morbidity in SMI individuals have been linked to common medical complications; particularly smoking- and obesity-related cardiovascular and respiratory problems, as well as chronic physical illnesses such as diabetes and hypertension (John et al., 2018). In fact, cardiovascular disease (CVD) accounts for 40-50% of overall mortality in SMI, according to research (Ringen et al., 2014). Metabolic syndrome (sometimes also referred to as Syndrome X or Dysmetabolic syndrome) is a cluster of cardiovascular risk factors including hypertension, abdominal obesity, dyslipidaemia, insulin resistance and glucose intolerance. The rates of metabolic syndrome are reported to be as high as 60% in individuals with SMI (Crump et al., 2013); the use of psychotropic agents, especially antipsychotic drugs, further increases the incidence of cardiometabolic risk factors in the SMI population (Shiers et al., 2014). With the rise in obesity and diabetes mellitus globally, a parallel increase in rates of metabolic syndrome seems inevitable. A complex interplay of aetiological factors, including lifestyle and environmental influences, for example smoking, unhealthy diet, psychotropic medication, sedentary behaviours and social deprivation, may all contribute to the pathogenesis of metabolic syndrome. Yet, for individuals with SMI, all these risk factors are more prevalent, up to twice as many, compared to the general population (Pradhan & Joshi, 2019; Pillinger et al., 2020).

Findings from the National Audit of Schizophrenia (Royal College of Psychiatrists, 2014) support earlier research findings and highlight the need to improve the focus on physical health needs in SMI. The audit of 5,091 records of people with SMI receiving care in mental health settings in England and Wales, found that the frequency of screening and monitoring interventions for physical health needs was significantly lower than in the general population. The report found that measures for weight and/or body mass index (BMI) had been recorded in less than half of the patients; and that interventions were only offered to just over half (54%) of patients with known high blood pressure. Several national policies and guidance frameworks including: the Royal College of Psychiatrists' Accreditation for Inpatient Mental Health Services (AIMS; RCPsych 2019), Care Quality Commission- physical health checks in SMI (CQC, 2017), the National Institute for Health and Care Excellence (NICE, 2014), the Quality and Outcomes Framework (QOF; NICE 2019), the Commissioning for Quality and Innovation- improving physical health for people with SMI (CQUIN; NHS England 2019), and the Lester UK adaptation of the Positive Cardiometabolic Health Resource tool (Shiers at al., 2014), provide best practice recommendations for improving physical health monitoring and outcomes in SMI, informed by current evidence. Similarly, the NHS Five Year Forward View for Mental Health and the NHS Long Term Plan for Mental Health prioritises the need for action to address the physical health needs of individuals with SMI in order to reduce health inequalities (NHS England, 2018).

Aims

- To identify all patients with severe mental illness registered at a General Practice in north London, and to evaluate and audit their care, specifically in relation to physical health monitoring.
- To propose strategies and recommendations to improve physical health monitoring in patients with severe mental illness within general practice.

Methods

The audit included all adult patients (over the age of 18 years) registered at the selected General Practice (GP) with a coded diagnosis of severe mental illness. For the

purposes of this audit, the following SMI diagnoses were included: schizophrenia, bipolar disorder, psychotic depression, and other psychoses; since these were the conditions specified in the mental health quality standards (QOF indicators) as constructed by NICE (NICE, 2019). Manual searching through the mental health register at the GP practice was performed to identify those patients with coded diagnoses of SMI as above.

Data was obtained from electronic patient case records and captured on a structured data collection form created in Microsoft Excel. Expected standards, outlined in Table 1, were largely based on the list of Quality and Outcomes Framework (QOF) indicators for mental health, as these components were developed from NICE best practice guidelines (NICE, 2019). In brief, QOF is an annual incentive programme for GP surgeries, which aims to improve patients' quality of care by financially rewarding practices for good practice, based on several indicators across several key areas of clinical care and public health. Although a voluntary programme, participation rates for QOF 2018-19 were very high at 95.1% (NHS Digital, 2020).

We then reviewed the NICE guidelines relating to psychosis, schizophrenia and bipolar disorder (NICE 2014; 2020), the Lester UK adaptation of the positive cardiometabolic risk assessment tool in SMI (Shiers et al., 2014), as well as activities agreed by the regional clinical commissioning group (CCG) and covered by the North-West London GP local enhanced services (NWL LES), for further recommendations both nationally and locally regarding annual physical health checks and monitoring for SMI patients. This generated 8 further components to be included in the audit, as shown in Table 1.

Two additional parameters of interest for the audit were: (i) Record of whether psychotropic medication was prescribed on the electronic repeat template, as this is good prescribing practice and allows for prompts to be generated to ensure patients receive regular medication reviews by a healthcare professional; (ii) Assessment of whether an enquiry about side effects of psychotropic medication was undertaken and recorded in the patients' notes over the past year; and whether a quantitative tool such as Glasgow Antipsychotic Side-effect Scale (GASS) or Liverpool University

Neuroleptic Side Effect Rating Scale (LUNSERS) was used (Waddell & Taylor, 2008; Day et al., 1995).

The chosen timescales for outcome measurement were generally based on those outlined in QOF standards and NICE guidelines; therefore, the parameters were evaluated over the preceding 12 months (period between January 2018 to January 2019).

For this audit, compliance for each parameter (Table 1) was assessed against an expected standard of 70%, as this is generally the cut-off for QOF payments, and features at the higher end of achievement thresholds with regards to identifying good quality care. We then applied a Red-Amber-Green (RAG) traffic light rating of compliance achieved for each parameter, such that $\geq 70\%$ was rated Green; 40-69% was Amber; and $< 40\%$ was Red.

Formal ethical approval was not required since the methodology was that of a clinical audit and thus no new patient data, care or intervention was collected or administered. Yet, in line with good medical practice and information governance, we obtained approval from the practice manager, partners and leadership team to undertake the audit, and ensured patient anonymity and confidentiality when reviewing the patient records and documenting the results. However, in the event of discovering any clinical errors or omissions with the potential for significant patient harm, we raised the particular issue with the patient's named GP for follow-up accordingly, and then subsequently disseminated the learning points more generally to the wider healthcare team during a meeting at the practice.

Table 1: Key best practice criteria for physical health monitoring in people with severe mental illness.

QOF indicators:
a) Record of total cholesterol: HDL ratio (serum lipids) in the last 12 months
b) Record of serum glucose or HbA1c in the last 12 months
c) CVD risk assessment (QRISK2) performed in the last 12 months (in patients aged 25-84 years)

<ul style="list-style-type: none"> d) Comprehensive care plan documented in the last 12 months e) Record of alcohol consumption in the last 12 months f) Record of blood pressure (BP) in the last 12 months g) Record of body mass index (BMI) in the last 12 months h) Record of advice given regarding pregnancy/contraception and patients' contraceptive intentions recorded in the last 12 months (in women aged <45 years)
<p>Components from NICE guidelines, Lester Tool and GP Local Enhanced Services:</p>
<ul style="list-style-type: none"> i) Record of weight in the last 12 months j) Record of ECG in the last 12 months k) Record of pulse in the last 12 months l) Record of dietary advice in the last 12 months m) Record of physical activity levels in the last 12 months n) Record of smoking status in the last 12 months o) Record of drug misuse status in the last 12 months p) Record of medication review in the last 12 months
<p>Other parameters of interest:</p>
<ul style="list-style-type: none"> q) Psychotropic medication prescribed on the electronic repeat template r) Enquiry about side effects of psychotropic medications in the last 12 months and whether GASS / LUNSERS tools were used

Abbreviations- QOF: Quality and Outcomes Framework; HDL: high-density lipoprotein; HbA1c: glycated haemoglobin (A1c); CVD: cardiovascular disease; GP: general practice; ECG: electrocardiogram; GASS: Glasgow antipsychotic side-effect scale; LUNSERS: Liverpool university neuroleptic side effect rating scale.

Results

A total of 59 patients were included on the mental health register at the selected GP practice; of which, 54 patients (92%) had coded diagnoses of SMI. The 5 other patients had diagnoses of either an acute psychotic disorder; psychotic episode; or resolved psychosis; and were no longer taking any antipsychotic or mood-stabilising medications. Regarding the breakdown of coded SMI diagnoses for the 54 individuals with severe mental illness included in the audit sample: 27 patients (50%) had a diagnosis of schizophrenia or psychosis; 20 (37%) were diagnosed with bipolar

disorder; and 7 (13%) had psychotic depression. All SMI patients were prescribed psychotropics for their mental illness.

The age range of the included sample was 18-88 years, with an average age of 47 years. 20 patients (37%) were within the age bracket of 18-39 years; 24 patients (44%) were between 40-60 years; and 10 patients (19%) were over 60 years old. The gender split was 44% male to 56% female. We also looked at the degree of multi-morbidity in the sample, finding that 69% of individuals had comorbidities; of which the most prevalent conditions were high cholesterol, hypertension, diabetes, asthma, osteopenia/osteoporosis and fatty liver disease.

Tables 2 and 3 show the record of monitoring for each physical health parameter as outlined in Table 1, in the last 12 months: period between January 2018 to January 2019. A summary of the audit compliance results of the 8 QOF indicators is given in Table 2; of which only 2 (record of alcohol consumption and blood pressure) reached the expected standard of 70%. Almost all the other parameters achieved >50% compliance (care planning, BMI, serum lipids, serum glucose, QRISK2 cardiovascular risk assessment); however, record of pregnancy/contraception advice was particularly poor, with only 9% compliance in women aged under 45 years.

Table 2: Summary of audit compliance results: Quality and Outcomes Framework (QOF) indicators examined over a 12-month period.

Criterion	Expected Standard	Audit Compliance	RAG Rating
Alcohol consumption	70%	85%	Green
Blood pressure	70%	70%	Green
Care plan	70%	69%	Amber
BMI	70%	56%	Amber
Serum lipids	70%	56%	Amber
Serum glucose	70%	54%	Amber
QRISK2	70%	52%	Amber

Pregnancy/contraception advice	70%	9%	Red
--------------------------------	-----	----	-----

Abbreviations- RAG: Red-Amber-Green; BMI: Body mass index; QRISK2: a cardiovascular disease risk assessment tool.

Table 3 presents the compliance results of the 10 remaining physical health parameters included in this audit of general practice; from criteria derived from NICE guidance, Lester Tool, locally agreed measures included in NWL LES, and other parameters of interest. Only 3 parameters (record of smoking status, medication review and psychotropic medication prescribed on the electronic repeat template) achieved the set standard of $\geq 70\%$ compliance. Over 50% compliance was reached for most of the remaining criteria (record of pulse, weight, dietary advice, physical activity, drug misuse). Record of ECG offered or performed within the last 12 months was only found in 26% of patients' notes. Similarly, only 39% of patient records had an enquiry about side effects of psychotropic medication in the last 12 months; and when noted, these were simply a general comment stating that the patient mentioned no side effects. Yet, none of the patient records in the sample evidenced a detailed enquiry into the type and extent of common specific medication side effects, nor the use of a quantitative scoring system such as GASS or LUNSERS tools.

Table 3: Summary of audit compliance results: Other parameters examined over a 12-month period.

Criterion	Expected Standard	Audit Compliance	RAG Rating
Smoking status	70%	89%	Green
Medication review	70%	83%	Green
Prescription entered on repeat template	70%	81%	Green
Pulse	70%	63%	Amber
Weight	70%	59%	Amber

Dietary advice	70%	57%	Amber
Physical activity	70%	57%	Amber
Drug misuse	70%	54%	Amber
Side effects enquiry	70%	39%	Red
ECG	70%	26%	Red

Abbreviations- RAG: Red-Amber-Green; ECG: electrocardiogram.

Discussion

Out of 18 parameters included in this audit, compliance against the set standard of 70% was only met in 5 criteria (28%), as shown in Table 2 and Table 3. Compliance scores over the set standard is highly commendable, although this may reflect local financial drivers pursuant to those criteria. For example, 3 of the 8 QOF indicators recommended by NICE were included in the General Medical Services (GMS) contract for QOF 2018/19 in England (NHS Digital, 2020); and it was these 3 indicators (alcohol consumption, blood pressure and care planning) which achieved the highest percentage compliance across the list (Table 2). Equally, most of the remaining QOF indicators were included in the locally agreed North-West London local enhanced services (NWL LES) contract, and we noted reasonable compliance rates of above 50% for all these parameters. However, contraception advice was not included in the England QOF 2018/19, nor local NWL LES contracts, thus likely explains why the compliance level was so low (9%). Yet providing pregnancy and contraception advice in this patient group is recognised by NICE as good practice, particularly considering the risks of conceiving whilst on psychotropic medications. For example, mood-stabilising drugs are known to be teratogenic: The Medicines and Healthcare products Regulatory Authority (MHRA, 2018; BNF, 2019) set strict guidance and advise that sodium valproate should not be administered to women of childbearing age due to the high risk of serious neurodevelopmental disorders (30–40% risk) and congenital malformations (approximately 10% risk). Besides, it would be anticipated that any psychotropic medication taken by the mother may cause side effects in the developing

foetus, as well as the careful consideration and specialist obstetric input which would be needed for management of the high-risk pregnancy and high-risk mothers themselves (Mwebe, 2018).

Moreover, any missed opportunities to conduct physical health monitoring and implement strategies to address unhealthy lifestyle behaviours is likely to further widen the health inequalities and provision of life-saving interventions desperately needed in the SMI population. This is particularly relevant here, as our study found that almost 70% of individuals in the sample suffered from multi-morbidity; of which common comorbidities included those related to cardiovascular disease (high cholesterol, hypertension and diabetes). As Silverwood et al. (2019) argue in their review, two thirds of mortality in SMI is avoidable if patients are offered prompt physical health screening checks for known health risk factors. Of particular note, checks including blood pressure, pulse, weight/BMI measures, serum lipids, serum glucose checks, smoking and ECG monitoring, can assist in identifying individuals at most risk of cardiometabolic complications (Mwebe & Roberts, 2019; NICE, 2016); especially cardiovascular disease, which is the leading cause of premature death in SMI.

As a result of the findings from this audit, we held a multi-disciplinary team (MDT) meeting at the GP practice in order to highlight these learning points to the full clinical and wider administration team and share our discoveries and recommendations. Furthermore, we are aware and are pleased that greater emphasis and attention is being placed on physical health monitoring in SMI patients in the realm of higher education for both medical and nursing students. Although habits, attitude, culture and established practices of experienced mental health professionals may prove more difficult to impact upon, and thus frequent continuing professional development (CPD) updates over time and the growth mindset of lifelong learning is to be encouraged among all healthcare staff. Clinical audits and service improvement projects are good platforms for exploring practice issues, and through which, evaluation of systemic processes can help to inform changes needed in practice and improve overall patient care. Encouraging involvement and raising the profile of quality improvement projects within practices could be a starting point to orientating staff toward evidence-based

healthcare provision. Equally, learning from such initiatives may help to augment current literature, alongside informing future research projects and impacting curriculum design and planning of healthcare-related course delivery.

According to the British Heart Foundation (2018), rates of CVD-related mortality have dropped in the general population over the past 20 years due to improvements in diagnosis, early screening and treatment; but in the SMI population, the health inequality in terms of prompt CVD management remains evident. Our audit results found that the compliance for ECG monitoring, as per the findings in Table 3, was very low at 26%. This percentage not only included those patients who had an ECG performed within the last year, but also took into consideration those individuals who were offered ECG testing but declined or did not attend for the appointment. Thus, it appears that although awareness around ECG monitoring in SMI has generally improved over the last decade, these essential physical health checks remain largely overlooked. Regular ECG checks are significantly important in the SMI population because of the risk of potentially fatal acquired long-QT syndrome with prolonged use of antipsychotic medications (Collins & Altman, 2012; Ringen et al., 2014; Kahl et al., 2018). ECG monitoring can also act as a screening tool for ischaemic changes, arrhythmias and other cardiac-related abnormalities.

The QRISK2 (updated to QRISK3 in 2018) is a tool embedded into primary care computer systems in General practice and is useful as a prediction assessment tool for the risk of developing cardiovascular disease over a ten-year period based on modifiable and non-modifiable risk factors. QRISK3 which now includes the use of antipsychotic medication and mental illness as potential risk indicators is very relevant to users of mental health settings as these medications are associated with a considerable degree of increased CVD risk (Hippisley-Cox et al., 2017). However, the application of QRISK tools across psychiatric services, especially in secondary mental health services (inpatient wards, community recovery teams) remains unclear and inconsistent. Research has found that due to confusion around roles and responsibility regarding physical care monitoring in primary and secondary care services, these settings may miss opportunities to offer individuals with SMI physical health monitoring checks and follow up interventions. For example, preliminary research

findings (from an unpublished study into cardiometabolic risk monitoring across 10 London acute inpatient psychiatric wards) found that QRISK assessment for inpatients was generally not conducted, largely with the expectation that the patient's general practitioner would follow up and offer the checks and necessary interventions instead (Mwebe, 2020). But this assumption is flawed, as it is vulnerable individuals, such as the SMI population, who tend to suffer as GPs become increasingly overworked and the robustness of call-recall strategies to prevent loss-to-follow-up falter. Furthermore, this notion of healthcare professionals omitting patient assessments and interventions in the hope and expectation for another colleague to assume the task, goes against the good practice and collaborative mantra from Public Health England of making every contact count (Public Health England, 2016). This is even more pertinent in the SMI population, in which active engagement with services is more likely to be variable and inconsistent. Therefore, the need for clear communication between primary and secondary care is paramount, particularly following patient discharge from hospital, and ensuring there is sufficient detail in the discharge paperwork to GPs and/or community mental health teams (CMHTs) informing them of what has been done during admission and what still needs to be done or needs following up in the community.

This audit highlights the need for increased health promotion strategies (baseline checks, monitoring and follow-up interventions) for smoking, alcohol, recreational drug use, sedentary lifestyle and dietary advice to be addressed collaboratively and consistently with patients. Our findings showed that the practice scored below the set standard (70%) in the latter three criteria, and yet active management for all of these indicators ought to be adapted as an integral part of the patients' assessment and treatment plan. This is because all these exogenous factors carry potential risk in influencing body physiological processes and thus can destabilise homeostatic processes. For example, certain drugs, chemicals and substances can influence the rate of biotransformation by increasing or inhibiting the metabolic action of liver enzymes. Of note, the polycyclic aromatic hydrocarbons in tar (found in cigarettes) induce liver CYP450 enzyme activity and so increase the clearance of drugs from the body. As such, smokers with mental illness might require higher doses of their prescribed

psychotropic drugs, e.g. clozapine, olanzapine (Mwebe, 2018). Yet increased doses not only enhance the effects of the antipsychotic drug but can also intensify its side effects. Moreover, smoking cessation in this patient population can lead to increased drug plasma levels if appropriate advice and care is not given to medication planning and reviews. As such, it is imperative that all the above factors, considering lifestyle choices and behaviour, become part of routine conversations and included into patients' care plans (Action on Smoking and Health, 2018).

Social-economic factors in the SMI population are key drivers for widening social and health inequalities; research consistently shows that poor physical and mental health are more common in those with a low socio-economic status (Mental Health Foundation, 2016). Weight gain issues, harmful use of recreational drugs, poor housing and unhealthy eating are some factors driving poor health in this patient group; individuals with SMI are more likely to feature in all the above for a myriad of reasons (Mental Health Foundation, 2016). In order to identify those at most risk, healthcare professionals need to first understand and appreciate the influences such factors have on health (with consideration for environmental, system and individual factors) to tailor strategies and address health inequalities (Mutsatsa, 2015). Our results showed compliance of 69% for care planning, just slightly below the set standard of 70%.

However, more concerning was the finding that only 39% of patient notes had a recorded entry about medication side effects in the last 12 months; none of which featured a detailed enquiry or use of quantitative rating scale. Screening for side effects associated with the use of psychotropic medications is a vital and an essential activity in the care planning process of SMI individuals, not least as an attempt to reduce negative iatrogenic effects on an individual's quality of life, but also because of the known cardiometabolic risk that these medicines carry. The Glasgow Antipsychotic Side-effect Scale (GASS) includes specific questioning regarding cardiometabolic risk (weight gain, cardiovascular effects, glucose abnormalities), as well as covering: central nervous system, extrapyramidal, gastro-intestinal, anticholinergic, hormonal and genitourinary side effects (Waddell & Taylor, 2008). The Liverpool University Neuroleptic Side Effect Rating Scale (LUNSERS) is an older, alternative scoring system containing a similar comprehensive assessment of side effects (Day et al., 1995). These

tools can greatly enhance the medication review process and can facilitate the crucial input of patient's views about treatment in order to guide evidence-based prescribing; and therefore increase concordance and effectively manage the individualistic balance of risk: benefit ratio (Mwebe, 2018; NICE, 2014; Holland et al., 2018). Hence, while the audit results demonstrated a positive 83% compliance with annual medication reviews, there is a need in practice settings for more detailed discussions relating to medication use, and the nature and degree of specific side effects.

Utilising repeat templates to order prescriptions for SMI patients can act as a key prompt for regular medication review. Fail-safe strategies such as these, are particularly apt for the SMI group, in which a robust system may be needed to tackle recurrent non-attendance and did-not-attends (DNAs). Various possible reasons for non-attendance to appointments in the SMI population have been proposed; these include poor physical health; chaotic lifestyle often due to the nature and severity of mental illness; some patients might not consider these meetings important, and for others it might be due to anxiety, fear, social phobia, stigma of living with mental illness and/or distressing side effects of psychotropic medication (Mental Health Foundation, 2016; Das-Munshi et al., 2018).

As the General Medical Services contract for QOF 2018/19 in England only included a small proportion of the list of best practice QOF indicators for mental health recommended by NICE, it is even more important for GP local enhanced services contracts to include those missing criteria, as one cannot ignore the undeniable weight and driving force of financial incentivisation (Doran et al., 2011).

Conclusion

There is definite room for improvement regarding physical health monitoring of SMI patients within general practice. Our audit found that only 5 out of 18 best practice criteria achieved compliance above the expected standard of 70%. Considering the significant physical health burden and potentially avoidable premature mortality rates within the SMI population, much more needs to be done to address the widening health inequality gap. This begins with increased vigilance and commitment to annual

physical health screening checks, particularly cardiovascular risk factors, and consistently offering individuals prompt and targeted interventions as a result.

Specific recommendations for improvement

- Clear and explicit communication is needed between primary and secondary care, particularly following patient discharge from hospital. The discharge paperwork to GPs and/or CMHTs should clearly detail what has been done during admission and what still needs to be done or needs following up in the community.
- GP practices should ensure they have contingency plans in place, in case service users DNA their physical health monitoring appointments. For example, reception manager or mental health lead at the practice could be tasked with contacting these patients and rebooking the appointments.
- Primary care computer systems have comprehensive templates with physical health tools embedded within them, that can be used for SMI patient reviews. Using such templates will reduce the likelihood of missed physical health check parameters.
- Frequent review of compliance against best practice guidelines should be assessed at GP practices; followed by regular MDT meetings highlighting the current performance and areas for improvement. Where clinical errors or omissions are discovered with the potential for patient compromise, this should be reported immediately to the appropriate patient care coordinator.

Further relevance for clinical practice

- General practice staff should be aware that people with severe mental illness are at greater risk of morbidity and mortality, and therefore, should recognise the significant role they have in detection, prevention and management of cardiometabolic risk and other related physical co-morbidities.

- Financial incentives are effective at increasing compliance results; ideally, all key best practice criteria for physical health monitoring in SMI should be included within the national QOF contract or GP local enhanced services contracts.
- Conducting detailed enquiries into side effects of psychotropic medications is essential; quantitative rating tools (i.e. GASS or LUNSERS) can provide a structured and helpful framework for this.
- Robust call-recall systems are needed in primary care to tackle non-attendance within this vulnerable patient group, and to enable the patient and carer to be actively involved in optimising physical health monitoring and management.

Acknowledgements

We would like to express special thanks and gratitude to staff at the North London General Practice who allowed us this opportunity to carry out this audit.

References

- Action on Smoking and Health. (2018). *Fact Sheet: Smoking and Mental Health*. [Online]. Available at: www.ash.org.uk/category/information-and-resources/fact-sheet s. [Accessed 19.01.2020].
- British Heart Foundation. (2018). *Statistics*. [Online]. Available at: <http://www.bhf.org.uk/statistics> . [Accessed 07.02.2020].
- British National Formulary. (2019). *Sodium valproate: MHRA/CHM advice*. [Online]. Available at: <https://bnf.nice.org.uk/drug/sodium-valproate.html> . [Accessed 18.02.2020].
- Care Quality Commission. (CQC). (2017). *Brief Guide: Physical Healthcare in Mental Health Settings*. London: Care Quality Commission. Available at: https://www.cqc.org.uk/sites/default/files/20191125_900852_briefguide-physical_healthcare_mental_health_settings_v4.pdf . [Accessed 25.02.2020].

Collins, G.S. & Altman, D.G. (2012). Predicting the 10-year risk of cardiovascular disease in the United Kingdom: independent and external validation of an updated version of QRISK2. *British Medical Journal*; 344: e4181. doi:10.1136/bmj.e4181.

Crump, C., Winkleby, M.A. & Sundquist, K. (2013). Comorbidities and mortality in persons with schizophrenia: a Swedish national cohort study. *American Journal of Psychiatry*, 170, 324-33.

Das-Munshi, J., Bhugra, D. & Crawford, M.I. (2018). Ethnic minority inequalities in access to treatments for schizophrenia and schizoaffective disorders: findings from a nationally representative cross-sectional study. *BioMed Central Medicine*; 16, 55. doi: 10.1186/s12916-018-1035-5.

Day, J., Wood, G., Dewey, M., & Bentall, R. (1995). A Self-Rating Scale for Measuring Neuroleptic Side-Effects: Validation in a Group of Schizophrenic Patients. *British Journal of Psychiatry*, 166(5), 650-653. doi:10.1192/bjp.166.5.650.

Doran, T., Kontopantelis, E., Valderas, J., Campbell, S., et al. (2011). Effect of financial incentives on incentivised and non-incentivised clinical activities: longitudinal analysis of data from the UK Quality and Outcomes Framework. *British Medical Journal*, 342, d3590.

Hippisley-Cox, J., Coupland, C. & Brindle, P. (2017). Development and validation of QRISK3 risk prediction algorithms to estimate future risk of cardiovascular disease: prospective cohort study. *British Medical Journal*, 357, j2099. doi:10.1136/bmj.j2099.

Holland, L., Floyd, E. & Soames, S. (2018). *The Nurse's Guide to Mental Health Medicines*. London: SAGE Publishers.

John, A., McGregor, J., Jones, I., Lee, S.C. et al. (2018). Premature mortality among people with severe mental illness - New evidence from linked primary care data. *Schizophrenia Research*, 199, 154-162.

Kahl, G.K., Westhoff-Bleck, M. & Kruger, T.H.C. (2018). Effects of psychopharmacological treatment with antipsychotic drugs on the vascular system. *Vascular Pharmacology*, 100, 20-25.

Medicines and Healthcare products Regulatory Agency (MHRA). (2018). *Drug Safety Update: Valproate Medicines (Epilim, Depakote)*. [Online] Available at: <https://www.gov.uk/drug-safety-update/valproate-medicines-epilim-depakote-contraindicated-in-women-and-girls-of-childbearing-potential-unless-conditions-of-pregnancy-prevention-programme-are-met>. [Accessed 24.02.2020].

Mental Health Foundation. (2016). *Fundamental Facts About Mental Health*. Mental Health Foundation: London.

Mwebe, H. (2018). *Psychopharmacology; A mental health professional's guide to commonly used medications*. London. Critical Publishing Ltd. ISBN: 9781912096046.

Mwebe, H. (2020). *Preliminary findings of study into cardiometabolic risk monitoring across 10 London acute inpatient psychiatric wards*. [Currently under review for publication on 27.01.2020].

Mwebe, H. & Roberts, D. (2019). Risk of cardiovascular disease in people taking psychotropic medication: a literature review. *British Journal of Mental Health Nursing*, 8(3), 136-144. Available at: <https://doi.org/10.12968/bjmh.2018.0033> .

Mutsatsa, S. (2015). *Physical Healthcare and Promotion in Mental Health Nursing*. London: SAGE Publishers.

National Institute for Health and Care Excellence. (2014). *Psychosis and schizophrenia in adults: prevention and management. NICE Clinical Guidelines 178*. London: National Institute for Health and Care Excellence. [Online]. Available at: <https://www.nice.org.uk/guidance/cg178> . [Accessed 21.02.2020].

National Institute for Health and Care Excellence. (2016). *Cardiovascular disease: risk assessment and reduction, including lipid modification. NICE Clinical Guidelines 181*. London: National Institute for Health and Care Excellence. [Online]. Available at: <https://www.nice.org.uk/guidance/cg181> . [Accessed 02.03.2020].

National Institute for Health and Care Excellence. (2019). *NICE Quality and Outcomes Framework indicator*. London: National Institute for Health and Care Excellence. [Online]. Available at: <https://www.nice.org.uk/standards-and-indicators/qofindicators> . [Accessed 06.01.2020].

National Institute for Health and Care Excellence. (2020). *Bipolar disorder: assessment and management. NICE Clinical Guidelines 185*. London: National Institute for Health and Care Excellence. [Online]. Available at: <https://www.nice.org.uk/guidance/cg185> . [Accessed 08.03.2020].

NHS Digital. (2020). *Quality and Outcomes Framework: QOF 2018/19 results*. [Online]. Available at: <https://qof.digital.nhs.uk/> [Accessed 09.03.2020].

NHS England. (2018). *NHS Mental Health Five Year Forward View Dashboard*. [Online]. Available at: <https://www.england.nhs.uk/mental-health/taskforce/imp/mh-dashboard/> . [Accessed 10.02.2020].

NHS England. (2019). *Commissioning for Quality and Innovation: 2017/19 CQUIN*. [Online]. Available at: <https://www.england.nhs.uk/nhs-standard-contract/cquin/cquin-17-19/> . [Accessed 07.03.2020].

Pillinger, T., McCutcheon, R.A., Vano, L., Mizun, Y., et al. (2020). Comparative effects of 18 antipsychotics on metabolic function in patients with schizophrenia, predictors of metabolic dysregulation, and association with psychopathology: a systematic review and network meta-analysis. *The Lancet*, 7(1), 64-77.

Pradhan, A. & Joshi, H. (2019). Detection and early intervention for psychosis. *InnovAiT*, 12(2), 67-71.

Public Health England. (2016). *Guidance: Making Every Contact Count (MECC): practical resources*. [Online]. Available at: <https://www.gov.uk/government/publications/making-every-contact-count-mecc-practical-resources> . [Accessed 09.02.2020].

Public Health England. (2018). *Research and analysis: Severe mental illness (SMI) and physical health inequalities: briefing*. [Online]. Available at: <https://www.gov.uk/government/publications/severe-mental-illness-smi-physical-health-inequalities> . [Accessed 19.02.2020].

Ringen, P.A., Engh, J.A., Birkenaes, A.B., Dieset, I. & Andreassen, O.A. (2014). Increased mortality in schizophrenia due to cardiovascular disease: a non-systematic review of

epidemiology, possible causes, and interventions. *Frontiers in Psychiatry*, 5, 137. doi:10.3389/fpsy.2014.00137.

Rodgers, M., Dalton, J., Harden, M., Street, A., Parker, G. & Eastwood, A. (2018). Integrated care to address the physical health needs of people with severe mental illness: a mapping review of the recent evidence on barriers, facilitators and evaluations. *International Journal of Integrated Care*, 18(1), 9.

Royal College of Psychiatrists. (2014). *Report for the second round of the National Audit of Schizophrenia (NAS2) 2014. Executive Summary*. [Online]. London: Healthcare Quality Improvement Partnership and Royal College of Psychiatrists. Available at: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwja8uKntaDtAhWSX8AKHY5jBWsQFjAAegQIBRAC&url=https%3A%2F%2Fwww.rcpsych.ac.uk%2Fdocs%2Fdefault-source%2Fimproving-care%2Fccqi%2Fnational-clinical-audits%2Fncap-library%2Fnational-audit-of-schizophrenia-document-library%2Fnas_round-2-report.pdf%3Fsfvrsn%3D6356a4b0_2&usg=AOvVaw3GbORZ24cVU9vWNMkDkgGo [Accessed 09.02.2020].

Royal College of Psychiatrists (RCPsych). (2019). *AIMS: Standards for Acute Inpatient Services for Working Age Adults - 7th Edition*. [Online]. Available at: <https://www.rcpsych.ac.uk/improving-care/ccqi/quality-networks-accreditation/assessment-and-triage-wards-AIMS/our-standards> [Accessed 07.01.2020].

Shiers, D.E., Rafi, I., Cooper, S.J. & Holt, R.I.G. (2014). 2014 update (with acknowledgement to the late Helen Lester for her contribution to the original 2012 version). *Positive Cardiometabolic Health Resource: an intervention framework for patients with psychosis and schizophrenia. 2014 update*. Royal College of Psychiatrists, London.

Silverwood, V., Chew-Graham, C. & Shiers, D. (2019). Improving the physical health of people with severe mental illness. *InnovAiT*, 12(4), 203-210.

Waddell, L. & Taylor, M. (2008). A new self-rating scale for detecting atypical or second-generation antipsychotic side effects. *Journal of Psychopharmacology*; 22(3): 238-243. doi: 10.1177/0269881107087976.

Notes on contributors

Dr Danielle Roberts

Dr Danielle Roberts is a GP Specialist Trainee on the London Imperial Vocational Training Scheme and a part-time research associate at University College London. She graduated from University of Bristol with Bachelor of Medicine and Bachelor of Surgery (MBChB) in 2015, awarded with Distinction; and also attained a First-Class Honours Bachelor of Science in Physiological Science (BSc). Danielle completed her Master of Science in Evidence-Based Healthcare (MSc) at University College London, again awarded with Distinction. Beyond her career path in general practice, she has a keen interest in mental health and academia.

Herbert Mwebe

Herbert Mwebe is a senior teaching fellow and a senior Lecturer in Mental Health in the School of Health and Education at Middlesex University. Within the Department of Mental Health, Herbert delivers physical health training for both undergraduate and postgraduate programmes. He is the CPD programme lead in the department, and his teaching and research interest focus on improving physical health in serious mental illness and psychopharmacological interventions in mental health settings. Prior to entering academia, Herbert worked in both inpatient, community and primary care settings; between 2013-2014 in General Practice. He worked in General Practice leading on a mental health project (PMS+ Mental Health Project) in City and Hackney commissioned by NHS England with a key function to providing timely management of people presenting with mental illness in primary care.