Primary Care Physical Health Checks for people with Severe Mental Illness (SMI) – Best Practice Guide

FIFTH EDITION

The Health Improvement Profile for Primary Care (HIP-PC)

Originally developed for the Northampton Physical Health and Wellbeing Project (PhyHWell)
NHS Northamptonshire and University of East Anglia

Sheila Hardy and Richard Gray (2018)

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Introduction

A large-scale meta-analysis confirmed that patients with severe mental illness (SMI) have significantly increased risk of cardiovascular disease (CVD) and CVD-related mortality (Correll et al 2017). They are more likely than the general population to engage in unhealthy lifestyle behaviours (De Hert et al 2011), such as being sedentary (Vancampfort et al 2012), smoking (Dickerson et al 2013), having diets that are high in saturated fats and refined sugars, while low in fruit and vegetables (Bly et al 2014), have a high alcohol intake and misuse drugs (McManus et al 2016), engage in unsafe sex (Kenedi et al 2017) and have poor sleep patterns (Soehner et al 2013). patients receiving all individual antipsychotic medications are at higher metabolic syndrome risk when compared to those who are antipsychotic-naïve (Vancampfort et al 2015).

The National Institute for Health and Care Excellence (NICE 2014) recommends that GPs and other primary healthcare professionals should monitor the physical health of people with psychosis or schizophrenia when responsibility for monitoring is transferred from secondary care, and then at least once a year. The health check should be comprehensive, focusing on physical health problems that are common in people with psychosis and schizophrenia such as cardiovascular disease, diabetes, obesity and respiratory disease and include recommended checks (i.e. weight, waist circumference, pulse and blood pressure, fasting blood glucose, glycosylated haemoglobin (HbA1c), blood lipid profile and prolactin levels, assessment of any movement disorders, assessment of nutritional status, diet and level of physical activity) and refer to relevant NICE guidelines for monitoring. A copy of the results should be made available to the care coordinator and psychiatrist for patients in contact with secondary care.

The HIP-PC has been adapted for primary care from the Health Improvement Profile (HIP) (White *et al.* 2009). This is a specific tool designed to help mental health nurses outline the physical health of the SMI patients they work with and direct them towards the evidence base interventions available to address identified health problems. A rationale and recommended action has been specified for each intervention. It is recommended that clinicians carrying out health checks using the HIP-PC have relevant training. The guidance takes into account that healthcare professionals in primary care are experienced in giving lifestyle advice.

Contents

Measurements

Body Mass Index

Rationale

There is evidence to suggest that 80% of people with SMI are overweight or have obesity (Daumit et al 2013). The body mass index (BMI) is a simple guide used to determine whether an individual is underweight, overweight or obese (WHO 2018). It is defined as the weight divided by the square of the height. For example, a person who weighs 70 kg and has a height of 1.75 will have a BMI of 22.9.
A BMI calculator can be found at:
https://www.nhs.uk/Tools/Pages/Healthyweightcalculator.aspx

Although BMI values are the same for both sexes, they may not be accurate in people who are athletes or who weight-train, in pregnant or breastfeeding women, or those over the age of 60 years. Ethnicity should be considered; particularly in patients of South Asian origin (overweight varies from BMI > 23, obesity from BMI > 25).

Recommended action

Diet advice should be offered to all patients to prevent weight gain. Guidance about weight loss should be offered to patients with:

- A BMI ≥ 28
- Any degree of overweight coinciding with diabetes or other serious diseases

Waist circumference

Rationale

People who carry their excess fat centrally (within the abdominal cavity) are more likely to suffer the consequences of being overweight (National Obesity Forum 2018). Decreases in waist circumference with medical weight loss in obese people are associated with improvements in components of metabolic syndrome (Rothberg et al 2016).

Recommended action

Measure waist circumference: ensure that a tape of adequate length is available. The correct position for measuring waist circumference is midway between the bottom of the ribcage and the uppermost border of the right iliac crest. The tape should be placed around the abdomen at the level of this midway point and a reading taken when the tape is snug but does not compress the skin. In practice it may be difficult for very overweight patients to accurately palpate those bony landmarks in which case placing the tape at the level of the belly button is recommended (National Obesity Forum 2018).
For patients with waist circumference ≥ 80 cm (female) / ≥ 94 cm (male) (National Obesity Forum 2018):

- Support and exchange information on diet (ie meal planning) and exercise

- Consider referral to a local weight/exercise management programme
- Consider medication review

Pulse rate

Rationale

Most antipsychotic medications have the potential for lengthening of the QT interval (prolonged: in males >450ms, in females >470ms – Ozeki et al 2010). Therefore, cardiac safety should be a routine part of clinical care in patients taking antipsychotic medication; a preventive strategy is valuable even if the absolute risk of serious cardiac events is low (Abdelmawla and Mitchell 2006). There is evidence that many typical antipsychotics increase the risk of ventricular arrhythmias and cardiac arrest (Ray *et al.*2001, Liperoti *et al*. 2005) and an association between many atypical antipsychotic drugs and the occurrence of unexplained sudden death (Abdelmawla & Mitchell, 2006). Carrying out an ECG also allows the opportunity to look for other possible problems such as gynaecomastia, hygiene neglect and rashes.

Recommended action

Check pulse annually. If raised perform an ECG.
Consider an ECG for all patients taking antipsychotics.
The BNF recommends that an ECG should be performed on patients:

- Taking pimozide, sertinol and clozapine or prescribed antipsychotics over the BNF limits
- Who have specific cardiovascular risk
- With a personal history of cardiovascular disease
- Being admitted as an inpatient

Patients with an abnormal ECG may be referred to a cardiologist or to the original prescriber for review of their treatment as appropriate.

Blood pressure

Rationale

People with severe mental illness are at a higher risk of developing high blood pressure than the general population. Suboptimal blood pressure control leaves patients at an unacceptably high risk of cardiovascular complications and death, particularly from coronary heart disease (CHD) but also from stroke (Angeli et al 2014). Interventions actively combining exercise and diet have demonstrated a reduction of both systolic and diastolic blood pressure by only 4–5 mmHg (NICE 2011a), therefore medication is often required.

Recommended action

Check CVD risk using QRISK®3-2017 risk calculator (https://qrisk.org/three/) for all eligible patients and exchange information on weight loss/exercise (if overweight), improved diet and reduction in alcohol and salt intake, assistance with stopping smoking.
For patients with blood pressure > 140/90 mmHg without a diagnosis of hypertension (NICE 2011a):

- Offer ambulatory blood pressure monitoring (ABPM) to confirm the diagnosis of hypertension
- If the patient is unable to tolerate ABPM, then offer home blood pressure monitoring (HBPM)
- Test urine for the presence of protein by sending a sample for estimation of the albumin:creatinine ratio and test for haematuria using a reagent strip
- Take blood sample to test for plasma glucose, electrolytes, creatinine, estimated glomerular filtration rate (eGFR), serum total cholesterol and HDL cholesterol
  Perform an ECG
- Prescribe medication following the stepped NICE guidance.

Temperature

Rationale

A raised temperature maybe caused by infection, heat stroke, alcohol withdrawal, anticholinergic drugs, allergic drug reaction, and agonist drugs (Dougherty and Lister 2015).

Neuroleptic malignant syndrome is a rare but potentially life-threatening individual reaction to neuroleptic drugs. It causes fever, muscular rigidity, altered mental status and autonomic dysfunction. It is usually associated with potent neuroleptics such as haloperidol and fluphenazine. The underlying pathological abnormality is thought to be central D2 receptor blockade or dopamine depletion in the hypothalamus and nigrostriatal/spinal pathways. This leads to an elevated temperature set point, impairment of normal thermal homeostasis and extrapyramidally-induced muscle rigidity (Patient UK 2015).

Recommended action

- Look for signs of infection and treat as appropriate
- Ask about alcohol withdrawal
- Check drug use
- For abnormally high temperatures with a fluctuating blood pressure and/or dystonia consider neuroleptic malignant syndrome and refer urgently to medics.

Blood tests

Liver Function Tests (LFTs)

Rationale

Antipsychotic medication can result in abnormal LFTs (Marwick et al 2012). Hepatic disease should be detected early to prevent further serious complications.

Recommended action

Check LFTs every 12 months. Follow usual protocols if results are abnormal.

Lipid Levels

Rationale

Dyslipidaemia is a key component of the metabolic syndrome and a precursor for cardiovascular disease.

Recommended action

Check cholesterol levels annually – lipid profile if cholesterol is raised. Support and exchange information on diet (i.e. meal planning) and exercise.

Primary prevention

- Before starting lipid modification therapy for the primary prevention of CVD, take at least one lipid sample to measure a full lipid profile. A fasting sample is not needed.
- Offer atorvastatin 20 mg for the primary prevention of CVD to people who have a 10% or greater 10-year risk of developing CVD. Estimate the level of risk using the QRISK3 assessment tool (Newsome et al 2017).

Abnormal levels (secondary prevention)

- Start statin treatment with atorvastatin 80 mg. Use a lower dose of atorvastatin if any of the following apply: potential drug interactions; high risk of adverse effects; patient preference.
- Measure total cholesterol, HDL cholesterol and non-HDL cholesterol in all people who have been started on high-intensity statin treatment at 3 months of treatment and aim for a greater than 40% reduction in non-HDL cholesterol. If a greater than 40% reduction in non-HDL cholesterol is not achieved: discuss adherence and timing of dose; optimise adherence to diet and lifestyle measures; consider increasing dose if started on less than atorvastatin 80 mg and the person is judged to be at higher risk because of comorbidities, risk score or using clinical judgement.

Glucose

Rationale

Diabetes occurs in 15% of people with schizophrenia and only 5% of the general population (British Heart Foundation 2017).

Risk factors include: family history of diabetes, physical inactivity, poor diet, smoking and the metabolic effects of antipsychotic medication. Typical antipsychotics, in particular the low potency ones such as chlorpromazine may induce or make existing diabetes worse (Newcomer *et al*. 2002). The atypical antipsychotics clozapine and olanzapine are associated with new onset or exacerbating type 2 diabetes, not just through their propensity to cause greater weight gain than other newer agents, but because of their effects on glucose regulation (Newcomer *et al*. 2002). There are also case reports linking risperidone and quetiapine to impaired glucose intolerance, diabetes and ketoacidosis (Taylor *et al*. 2007).

Recommended action

Blood glucose should be checked at least annually. It may be more practical to do a random test though a fasting test will be more accurate. The World Health Organization (2011) recommends that HbA1c can also be used as a diagnostic test for diabetes providing that stringent quality assurance tests are in place and assays are standardised to criteria aligned to the international reference values, and there are no conditions present which preclude its accurate measurement.

- More frequent assessments are required for patients with significant risk factors for diabetes (overweight, Asian/African ethnicity etc) (Barnett *et al.* 2007). Consider checking every 6 months
- Support and exchange information on diet (ie meal planning) and exercise
- If diabetes is diagnosed, refer to practice diabetes nurse for further investigations, education and treatment.

Prolactin

Rationale

Hyperprolactinaemia is a common side-effect of many antipsychotic drugs. Symptoms include gynaecomastia, galactorrhoea, amenorrhoea and sexual dysfunction. Switching to an antipsychotic with a lower propensity to cause hyperprolactinaemia has led to normalisation (Haddad *et al.* 2001).

Recommended action

Consensus guidelines for managing prolactinaemia (Peveler *et al.* 2008) recommend that healthcare professionals should monitor proactively for hyperprolactinaemia as it maybe asymptomatic.

- Patients prescribed prolactin elevating antipsychotics should, where possible, have this issue explained to them prior to commencing treatment and be screened for symptoms suggestive of hyperprolactinaemia before starting treatment (Haddad *et al.* 2001). The test should be repeated three months later. If there is no change in drug treatment and prolactin levels are within normal range then there is no need to repeat the test.
- If the elevation of prolactin levels is mild (<1000 mIU/L (~50 ng/mL)) then it may be reasonable to continue to monitor the level. However, if even a mildly elevated level persists for more than 3 months, particularly if accompanied by amenorrhoea, bone mineral density may be

compromised; the possibility of reducing dose or switching to an antipsychotic with lower potential for prolactin elevation should be discussed with the patient. Consider measuring sex hormones (i.e. testosterone or oestrogen).

- When elevation is persistent and >1000 mIU/L (~50 ng/mL) then the clinician should consider switching to a drug with a lower potential to elevate prolactin if this can be achieved safely and is consistent with the clinical status of the patient as a whole
- For female patients switching to a drug with a lower potential to elevate prolactin may result in the return of fertility, and contraceptive advice should be given.
- If switching to a drug with a lower potential to elevate prolactin is not possible, it would be reasonable for clinicians to consider offering an oral contraceptive to female patients with amenorrhoea, if this is not contraindicated, to reduce the risk of subsequent osteoporosis.
- In any patient with a prolactin elevation greater than 3000 mIU/L (~150 ng/mL) then a prolactinoma should be considered.
- If the levels do not return to normal upon switching to a less prolactin-elevating antipsychotic, or if such switch is not possible for clinical reasons, then referral to a specialist in endocrinology is warranted to exclude a prolactinoma. (Peveler et al 2008)

You also should consider other causes of hyperprolactinaemia e.g. pregnancy or hypothyroidism.

Urea and Electrolytes (U & Es) and calcium

Rationale

There is a risk of electrolyte imbalance when taking antipsychotic medication particularly at high doses. For patients taking lithium, there is a higher than normal incidence of hypercalcaemia and abnormal renal function (BNF 2018).

Recommended action

- Check U & Es and calcium annually or when presented with symptoms.
- For patients taking lithium six monthly checks are recommended (BNF 2018).

Thyroid Function Test

Rationale

Studies have indicated that the elevated serum levels of T4 may be specific for acutely ill schizophrenic patients and that neuroleptic medication may affect thyroid hormone metabolism and that there is a spectrum of thyroid function test abnormalities in chronic schizophrenia (Santos et al 2012). For patients taking lithium, there is a higher than normal incidence of hypothyroidism (BNF 2018).

Recommended action

- Check thyroid function annually or in the presence of symptoms

- For patients taking lithium six monthly checks are recommended (BNF 2018).

Full Blood Count (FBC)

Rationale

A case-control study (Teixeira *et al.* 2009) in patients with schizophrenia showed a significantly higher number of patients with changes on leukocytes. Many patients presented low values of haemoglobin, erythrocytes and platelets. Leukopenia and neutropenia are recognised as side effects of antipsychotic medication (Taylor *et al.* 2007).

Recommended action

Check FBC annually or in the presence of symptoms.

B12 and Folate

Rationale

A case-control study (Teixeira *et al.* 2009) in patients with schizophrenia presented low values of vitamin B12. Having a deficiency of vitamin B12 just because of eating a poor diet is rare in Western countries, but unhealthy diets are common lifestyle choices of people with schizophrenia (Bly et al 2014).

Recommended action

Check B12 and folate annually or in the presence of symptoms.

Lithium levels

Rationale

There is potential toxicity caused by lithium therapy when the serum levels are outside of the narrow therapeutic range (BNF 2018).

Recommended action

It is recommended that lithium levels are monitored every three months (BNF 2018).

Vitamin D

Rationale

The main source of vitamin D is made in the skin by the action of sunlight; therefore, people who do not go outside are at risk. Vitamin D deficiency is associated with incident cardiovascular disease. Correction of vitamin D deficiency could contribute to the prevention of cardiovascular disease (Welles et al 2014).

Recommended action

Monitor vitamin D levels every year or if patient has symptoms (tiredness, aching). Advise patients to get exposure to sunlight. Offer supplements if levels are low or patient is at risk.

Screening

Cervical Cytology (Women only)

Rationale

Women with schizophrenia have a lower cervical cancer screening rate (63% vs 73%) than those without severe mental health problems (Disability Rights Commission 2006).

Public Health England (2018) report that mortality rates have fallen by up to 70% since the introduction of the NHS Cervical Screening Programme in 1988; though despite fewer cases of cervical cancer, incidence rates remain a concern because some women are not attending for screening.

Recommended action

Determine patient history of cervical cytology. (Recommendation: under 25 years - no screening; 25-49 years - three yearly; 50-64 years - five yearly; 65+ years - those who have not been screened since age 50 or have had recent abnormal tests) If no recent cervical cytology and has been sexually active, then offer appointment with the practice nurse.

Prostate and testicular examination (Men only)

Rationale

Cancer of the testicles accounts for only about 1% of all cancers in men. It is however, the most common type of cancer in males ages 16 to 35 and can occur any time after age 15. Often, only one testicle is affected (Cancer Research 2013a). Prostate cancer is the most common cancer in men in the UK, with over 40,000 new cases diagnosed every year. It usually develops slowly, so there may be no signs for many years. There is no single test for prostate cancer. It is diagnosed from a blood test, prostate-specific antigen (PSA) and a physical examination of the prostate (known as a digital rectal examination or DRE) and a biopsy. Men are not routinely offered PSA tests to screen for prostate cancer as results can be unreliable.

Recommended action

- Exchange information on testicular self-examination (Cancer Research UK 2013a). How to: https://www.cancerresearchuk.org/about-cancer/testicular-cancer/getting-diagnosed/finding-early
- Advise to see their GP if they find any abnormalities.
- Advise patients in at risk groups (men aged 50 or older, of African-Caribbean or African descent, and those who have first degree male relative with prostate cancer) to discuss the benefits of testing for prostate cancer with their GP.

Teeth

Rationale

Antipsychotics, antidepressants and mood stabilisers can cause reduced saliva flow leading to caries, gingivitis and periodontal disease (Robson and Gray 2007). Dental health may also be affected by poor diet and oral hygiene, and smoking (NICE 2004). The extent of dental disease can be directly related to schizophrenia intensity, impact of negative symptoms and the length of hospitalisation (Thomas et al. 1996).

Recommended action

Enquire about oral hygiene and give the appropriate advice.
Dental check-ups should be every three months to two years depending on need (DOH 2009). Patients should be encouraged to take regular visits to the community dentist (NICE 2004).

Eyes

Rationale

Antipsychotic medication may cause lens and cornea damage and has been associated with cataract development (Richa and Yazbek (2010).

Recommended action

Patients with severe mental illness should be encouraged to routinely visit a local optician/optometrist every two years.

Feet

Rationale

Some patients with severe mental illness struggle to maintain their personal care. Lack of proper care, ill-fitting shoes and general foot neglect are responsible for the majority of foot problems. Feet are the foundation of the body, so if the foot is not functioning correctly, ankles, knees, hips and lower back are not aligned correctly, and problems can develop throughout the entire body.

Recommended action

- Exchange information on keeping feet healthy, eg washing daily, trimming nails, treatment for burns, cuts and breaks in the skin (NHS Choices 2015a).
- If the patient is presenting any signs/symptoms of foot problems refer to the chiropodist.

Breast Examination (Women)

Rationale

Breast cancer is the most common cancer in the UK (Breast Cancer Care 2010).
Hyperprolactinaemia can be an adverse effect of antipsychotic therapy that leads to breast-related problems (Vyas 2012).

Recommended action

All patients should be advised on self examination (Breast Cancer Care 2010).

- Teach the breast awareness 5-point code:
    1. Know what is normal for you
    2. Know what changes to look and feel for
    3. Look and feel
    4. Report any changes to your GP without delay
    5. Attend routine breast screening if you are aged 50 or over
- Check risk factors for breast cancer (eg previous history, family history, age) (Patient UK 2015)
- If there are any breast abnormalities, refer for further investigations (Patient UK 2015)
- Check for increased levels of serum prolactin (Vyas 2012)

Breast Examination (Men)

Rationale

The causes of breast cancer in men are not fully known. However, the most important risk factor is increasing age. Most men who get breast cancer are over 60 although younger men can be affected (Breast Cancer Care 2008). Hyperprolactinaemia can be an adverse effect of antipsychotic therapy that leads to breast-related problems (Vyas 2012).

Recommended action

- Check risk factors for breast cancer (age > 60 years, previous radiotherapy to the chest, obesity, family history of breast cancer, high oestrogen levels, chromosomal syndromes) (Breast Cancer Care 2008)
- Check for any symptoms (painless lump, nipple discharge, ulceration or swelling) (Breast Cancer Care 2008)
- Refer to breast clinic for further investigations (Breast Cancer Care 2008)
- Check for increased levels of serum prolactin (Vyas 2012)

Menstrual Cycle

Rationale

Hyperprolactinaemia can cause amenorrhoea which is associated with anovulation (absence of ovulation), and infertility.

Recommended action

- Check for amenorrhoea - consider offering an oral contraceptive, if this is not contraindicated, to reduce the risk of subsequent osteoporosis
- Check for increased levels of serum prolactin, disturbed menstrual cycle and irregular menstrual cycle (Vyas 2012). See under Blood Tests – prolactin.

Urine

Rationale

Many conditions and chronic urinary tract infection can be detected by using medical urine test strips, and the amount of urine produced can indicate certain conditions.

- Polyuria is the passing of excessive volumes of urine may be a sign of diabetes, renal failure, alcohol and drug misuse, metabolic abnormalities (Patient UK 2015) and polydipsia.
- Oliguria is reduced urine volume. The cause may be due to dehydration, vascular collapse or low cardiac output (Patient. UK 2016).
- Urinary incontinence is a less frequently reported side-effect of the antipsychotic clozapine (De Fazio et al 2015).

Recommended action

- Assess for signs of dehydration (NHS Choices 2015), encourage fluids and implement fluid balance chart to evaluate
- Assess for symptoms of polyuria (Patient. UK 2016), implement fluid balance chart to evaluate
- Check for any urine frequency/incontinence issues
- Dip test urine using eight parameter (as a minimum) diagnostic strips. Follow usual protocols for abnormalities.

Bowels

Rationale

Some patients with SMI may have difficulties in communication and these can prevent or delay diagnosis even with relatively straightforward, easy-to-diagnose symptoms (Shefer et al 2014). Eating a diet low in red or processed meat and high in fibre, fruit and vegetables can reduce the risk of bowel cancer. Being physically active helps to cut the risk but being overweight or regularly drinking too much alcohol increases it (Cancer Research UK 2013b).

Recommended action

- Exchange information on increasing physical activity, lowering alcohol and a healthy diet
- The NHS Bowel Cancer Screening Programme offers screening every two years to all men and women aged 60 to 69 (NHS Cancer Screening Programmes 2009b)
- Check for signs of irritable bowel symptoms, diarrhoea or constipation, excessive urgency, gastrointestinal symptoms, straining, bleeding, need for laxatives
- Check for any bowel frequency/incontinence issues
- Rapid referral for endoscopy if symptoms are suspicious (NICE 2011b)

Lifestyle

Sleep

Rationale

Most adults need around 7–8 hours of sleep each night (Sleep Council 2018). In untreated schizophrenia, profound insomnia can result from psychotic symptoms; although antipsychotic treatment can reduce insomnia, the side effects of sedation and residual insomnia can occur. Complaints of poor sleep quality are directly related to negative assessments of quality of life. Improved sleep may lead to improved ability to cope with stress, and increased energy (Soehner et al 2013).

Recommended action

- Clarify any patient sleep problems
- Provide education on good sleep hygiene and benefits of a sleep diary
- Consider medication review.

Smoking

Rationale

Smoking rates are high in people with SMI (Osborn et al. 2013, Vancampfort et al. 2013, Mitchell et al. 2011). Neurobiological, psychological, behavioural and social factors make it difficult for people with mental illness to stop smoking (Robson & Gray 2007). Smoking cessation medication and other non-pharmacological support can increase abstinence rates in those with mental health problems to as high as those in the general population (Foulds et al. 2006, Campion et al. 2008). However, those with mental illness have previously been less likely to receive smoking cessation advice (Prochaska et al 2017).

Stopping smoking reduces the risk of (NHS Choices 2018):

- Developing illness, disability or death caused by cancer, heart or lung disease
- Gangrene or amputation caused by circulatory problems
- Exposing others to secondhand smoke
- Children in the same household suffering from asthma or glue ear
- Infertility levels, and an unhealthy pregnancy and baby
- Breathing difficulties and decreased general fitness
- Less enjoyment of the taste of food

Further reading: http://www.ash.org.uk/files/documents/ASH_120.pdf

Recommended action

- Give advice about the possible health risks associated with smoking
- Ask about respiratory symptoms; chest examination if appropriate
- Refer any patients wishing to quit smoking to NHS Stop Smoking Services if appropriate (Public Health England 2017, Department of Health 2016) or

the primary care clinic's stop smoking service. They may need to be seen individually. Review medication regularly.

- Smoking increases the metabolism of anti-psychotic medication, by up to 50%. This means that smokers with schizophrenia require higher medication dosages than non-smokers to achieve the same therapeutic effects (Sagud, 2009). If a patient stops or reduces their smoking, a medication review should be undertaken as doses may need to be reduced.

Nicotine replacement is available in a variety of forms and strengths to encourage patient preference and acceptability. Combining patch and faster-acting oral NRT improves efficacy. Side effects include mild local irritation of mouth, throat or nose.

Bupropion is associated with seizures and is contraindicated in bipolar affective disorder and epilepsy. It should not be prescribed with drugs which increase risk of seizures such as tricyclic antidepressants and some anti-psychotics. Bupropion can also alter blood levels of medication such as antipsychotics and antidepressants.

Varenicline has been reported to be more effective and have fewer side effects than bupropion (Cahill *et al.* 2007). A study has shown that it does not worsen symptoms of depression or anxiety as previously thought (Anthenelli 2013).

Exercise

Rationale

People with severe mental illness are more physically inactive than the general population (Vancampfort et al 2012). Physical activity can have a positive effect on psychological well-being in people with schizophrenia (DH 2004).

Recommended action

Identify the patient's level of activity. The recommendation for exercise to be of benefit is 30 minutes five days a week (NICE 2015). Help the patients make an exercise plan which fits in with their lifestyle and builds up activity gradually. For some individuals it may be appropriate to refer to an exercise scheme if there is one in your area.

Alcohol Intake

Rationale

Alcohol misuse is one of the most common and clinically significant co-morbidities among patients with severe mental illness (McManus et al 2016). There is considerable evidence to support the positive impact of reducing unsafe alcohol consumption on cardiovascular health (NHS Information Centre 2010). Many antipsychotics can cause sedation and impair alertness, concentration and coordination. The use of alcohol can further increase any impairment (Rethink 2017).

Recommended action

Offer recommendations on sensible daily alcohol intake for adults (Drinkaware 2018):

- Women should not regularly drink > 2–3 units of alcohol a day
- Men should not regularly drink > 3–4 units of alcohol a day

Women who regularly drink > 6 units a day (or > 35 units a week) and men who regularly drink > 8 units a day (or 50 units a week) are at highest risk of alcohol-related harm. Offer referral to the local Alcohol Support Agency.

Diet

Rationale

In a survey of the dietary habits of 102 people with SMI by McCreadie (2003) the average fruit and vegetable intake for these people was 16 portions a week, compared with recommended intake of 35 per week (NHS Choices 2015b). The physical health consequences of a poor diet include CVD, diabetes, obesity and some cancers. Studies of people with SMI repeatedly show that saturated fats from dietary intake of meat and dairy products are associated with worse outcomes in schizophrenia (Peet 2004). There is a particularly strong association between sugar consumption and poorer outcome in schizophrenia whereas consumption of fish and sea food, particularly omega 3 fatty acids, has been associated with better outcomes (Peet 2004).

Recommended action

Agree and implement a diet plan with the patient (and any carers) – may include referral to other members of the multidisciplinary team.

- Explain that five portions of fruit/vegetables each day and reducing fat intake, reduces the risk of cancer, coronary heart disease, and other chronic illnesses
- Aim to address potential barriers (access and availability of fresh fruit/vegetables, awareness of health benefits and attitudes towards buying, preparing and eating fruit/vegetables)

Fluid Intake

Rationale

Many people with severe mental illness do not drink enough fluid leading to dehydration. The body works less efficiently, even with a relatively low level of fluid loss (NHS Choices 2018). Some of the early warning signs are feeling thirsty and light-headed, and having concentrated, strong-smelling urine.

Overconsumption of fluid can also arise from a condition called polydipsia which is a serious complication of some psychotic illnesses, including schizophrenia. The exact reason for any one person developing polydipsia is unclear, but if untreated, the high intake of fluids can lead to hyponatraemia, which in turn can lead to coma or even death. It has been estimated that between six and 17% of psychiatric inpatients suffer from polydipsia (Hutcheon 2013).

Recommended action

Determine patient's daily fluid intake:
If < one litre/day:

- Check for signs of dehydration
- Encourage the patient to drink 1-2 litres (6–8 glasses) of fluid every day (more during hot weather and physical exertion)
- Exchange information on increasing fluid intake (drinking semi-skimmed milk, diluted fruit juices, diluted fruit squash) (NHS Choices 2018)

If > three litres/day check for signs of polydypsia (Hutcheon 2013), such as increased urine output. Implement a fluid balance chart if possible; enlist help of carers and family.
Electrolyte assessment if initial intervention is unsuccessful.

Caffeine intake

Rationale

Caffeine is a central stimulant, ie it stimulates the brain. Caffeine is present in drinks such as coffee, tea and cola (NWMHP 2013a). Too much caffeine can cause feelings of anxiety and nervousness, sleep disruption (especially difficulty getting off to sleep), restlessness, irritability, increased diuresis, stomach complaints, tremulousness, palpitations and arrhythmias (NWMHP 2013a). A moderate daily caffeine intake of 250–500 mg is not associated with adverse events (NWMHP 2013a). Psychosis can be induced in normal individuals ingesting caffeine at toxic doses, and psychotic symptoms can also be worsened in patients with schizophrenia using caffeine (Broderick and Benjamin 2004).

Food or drink item	Average caffeine content
1 cup of coffee	75–100 mg
1 cup of tea	50 mg
1 can of cola	40 mg
1 energy drink	90 mg
Bar of plain chocolate	50 mg
Bar of milk chocolate	25 mg
Adapted from Food Standards Agency (2018)	

Recommended action

- Exchange information on reducing caffeine intake (stopping gradually to avoid withdrawal effects) (NWMHP 2013a)
- Check for symptoms of caffeinism or caffeine toxicity (> 1000 mg/day), which can make illnesses such as anxiety more resistant to drug treatment

Safe Sex

Rationale

Although a smaller proportion of people with SMI are sexually active compared to the general population, those that are sexually active are more likely to engage in

high risk behaviours that may lead to HIV, such as sex without a condom and injecting drug use (Kenedi et al. 2017). Reasons for this include lack of knowledge about how sexually transmitted diseases (STIs) and HIV are transmitted and prevented (NICE 2007), a susceptibility to coercion into unwanted sexual activity, difficulties in establishing stable social and sexual relationships, and comorbid alcohol and substance use (Kenedi et al 2017).

Recommended action

- Identify if the patient is engaging in behaviours that increase STI risk
- Provide sexual health advice
- If STI is suspected, refer to the Genito-Urinary Medicine Clinic

Sexual Satisfaction

Rationale

Antipsychotic medication can have an adverse effect on sexual function, which impacts greatly on quality of life (Hanssens *et al.* 2006). A study (Smith *et al.* 2002) showed that sexual dysfunction occurred in 45% of patients taking antipsychotic medication. The main cause of sexual dysfunction in both men and women was hyperprolactinaemia.

Recommended action

- Determine the patient's level of sexual activity – refer for gynaecological examination and laboratory assessments if required (EAU 2005)
- Use side effects scale for antipsychotic medication such as the Glasgow Side Effect Scale (GASS).
- Perform systemic assessment (McGahuey et al. 2000) (eg Arizona Sexual Experience Scale- go to: https://www.mirecc.va.gov/visn22/Arizona_Sexual_Experiences_Scale.pdf
- Check for increased levels of serum prolactin, ask about decreased libido and arousal, orgasmic dysfunction (Vyas 2012).

Cannabis

Rationale

Studies have found a link between cannabis and psychosis (Zamberletti et al. 2012, Kucewicz et al. 2011). Continued cannabis use after onset of psychosis predicts adverse outcome, including higher relapse rates, longer hospital admissions, and more severe positive symptoms than for individuals who discontinue cannabis use and those who are non-users (Schoeler et al 2016).

Recommended action

- Patients' cannabis use should be recorded during a physical health check
- Ask about other non-prescribed drug use
- Work with support of dual diagnosis worker/service - systemically evaluate using a drug use scale
- Implement health behaviour interventions

Medication review

Rationale

The medication prescribed for people with mental illness has many potential side-effects.

Antidepressants

The most common prescribed antidepressants in primary care are selective serotonin reuptake inhibitors (SSRIs). The most frequent adverse effects associated with these are nausea, diarrhoea, dizziness, agitation, insomnia, tremor, sweating and sexual dysfunction. The risk of bleeding is increased in patients taking SSRIs. Other antidepressants such as venlafaxine can increase the blood pressure and mirtazapine can cause weight gain.

Antipsychotics

Antipsychotics have a wide range of side effects. The most widely researched include sedation, weight gain, sexual dysfunction and movement disorders (dystonia, akathisia**,** parkinsonian movement disorders, tardive dyskinesia)**.**

Mood stabilisers

In long-term use lithium has been associated with thyroid disorders and mild cognitive and memory impairment. Lithium salts have a narrow therapeutic/toxic ratio, therefore it is important to determine the optimum range for each individual patient. Lithium toxicity is made worse by sodium depletion (BNF 2018).

In order to be effective, carbamazepine has to reach a given level in the blood (NWMHFT 2013b). Side effects include dizziness, drowsiness, shaky movements and feeling sick. Carbamazepine can cause a chronic low white blood cell count which increases susceptibility to infection (NWMHFT 2013b).
Valproate causes an increase in appetite and therefore weight gain (NWMHFT 2013b). Side effects include dizziness, drowsiness, shaky movements, feeling sick, impaired liver function, thrombocytopenia and impaired platelet function (NWMHFT 2013b).

Recommended action

1. Monitor medication use, adherence and side-effects (NICE 2014). The accuracy of other medication can also be checked at the same time as reviewing the antidepressants, antipsychotics and/or mood stabilisers.
2. In patients taking an SSRI, check whether they are also prescribed any drugs which may cause bleeding (triptan, warfarin, heparin, non-steroidal anti-inflammatory drugs, aspirin). If they are, then discuss with GP.
3. Blood tests should be taken as described in the blood test section.
4. In patients taking antipsychotics, use a recognized tool such as the Glasgow Antipsychotic Screening Scale (GASS). This is a self-rating tool completed by the patient.

5. Sedation may be dealt with by the patient taking their medication at night just before they go to bed. The dose may need to be reduced or changed if this is a big problem.
6. Refer back to original prescriber (NICE 2014) in the case of:
    - Observed side effects
    - Return of symptoms
    - Any physical problems which may be related to the drug
    - Any issues flagged up by the patient
7. All women with childbearing potential who take psychotropic medication should be encouraged to discuss pregnancy plans with their doctor. They should be made aware of the potential effects of the medications in pregnancy (including the risks of relapse, damage to the foetus, and the risks associated with stopping or changing medication) regardless of whether they are planning a pregnancy. The use of reliable contraceptive methods should be discussed (SIGN 2013).
8. Women taking antipsychotics during pregnancy should be treated as high risk for gestational diabetes and monitored for blood glucose abnormalities (SIGN 2013).
9. Women who are taking clozapine should not breast feed (SIGN 2013).

Additional factors

Care plan

Rationale

All people with a long-term condition (including mental illness) should have a care plan. The care-planning process needs to be multi-disciplinary in order to identify issues to do with the 'whole person', including the presence of other long-term illnesses or social care needs (Goodwin et al. 2010). The plan should be agreed between individuals, their family and/or carers as appropriate. The Care Programme Approach (CPA) is the process which mental health service providers use to co-ordinate the care for people who have mental health problems (Department for work and pensions 2011).

Recommended action

- If the patient is under the care of secondary care, Care Programme Approach (CPA), the care plan is scanned into the patient record. This plan should be discussed with the patient.
- If the patient is not under the care of secondary care, the healthcare professional should document an accurate and easily understood plan of care as part of the annual review by discussing this with the patient, family and/or carers. The discussion should include the patient's preferred course of action in the event of a clinical relapse. It should also contain a discussion around the following issues; social support; input from secondary and /or voluntary mental health; early warning signs that may indicate possible relapse; occupational status (NICE 2014).

Flu vaccination

Rationale

Patients with severe mental illness are at an increased risk of cardiac, respiratory disorders and diabetes.

Recommended action

Offer annual immunisation to patients with or at risk of cardiac, respiratory disorders and diabetes.

Follow up

Rationale

The patient may not attend due to his/her mental state. It is important, therefore to set up a robust system to allow further opportunities to attend.

Recommended action

- Try contacting the patient (or carer if known) by telephone
- Send a letter requesting that they make a new appointment
- If unknown to secondary care, inform the GP of their non-attendance
- If known to secondary care, inform the secondary care link worker.

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