East London NHS
NHS Foundation Trust

Standards for physical health monitoring of patients on antipsychotic treatment

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Name and Job Title of author:	Dearbhaile Kelly (Clinical Lead Pharmacist)
Original Contributing Authors: **Lead Psychiatry Clinician** **Lead Pharmacist:**	 Dr. Richard Evans (Associate Medical Director) Dr. Pricilla Kent (Consultant Psychiatrist) Dr. Caroline Methuen (Consultant Psychiatrist) Tsana Rawson (Clinical Lead Pharmacist) Jennifer Melville (Deputy Chief Pharmacist)
Executive Director lead :	Paul Gilluley
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1.0	2015			
2.0	June 2021	Dearbhaile Kelly	Clinical Lead Pharmacist	Page 1: update in layout and tables used as per ELFT procedure template Contents page: updated and reworded as per ELFT procedure template. Section 1: update to the NICE clinical guideline Section 2: change in wording to say purpose of this guideline Section 4: choosing an antipsychotic- section newly added Section 5: update to the relevant NICE guidelines Appendices: tables redone

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1.0 Introduction

Mental Health Specialist Services will initiate antipsychotic treatment in patients with mental health diagnoses usually after assessment in secondary care, with continuation of treatment in primary care by General Practitioners (GPs).

Antipsychotics have known adverse drug effects that can affect the physical health of patients, including weight gain, hyperlipidaemia, hyperglycaemia and diabetes. (1) Monitoring of patients for these effects following initiation of treatment can help improve physical health outcomes.

NICE clinical guideline [CG178] 2014 states that 'the secondary care team should maintain responsibility for monitoring service users' physical health and the effects of antipsychotic medication for at least the first 12 months or until the person's condition has stabilised, whichever is longer. Thereafter, the responsibility for this monitoring may be transferred to primary care under shared care arrangements.' (2)

2.0 Purpose of these guidelines

This document sets out the standards for the physical health monitoring of patients in East London NHS Foundation Trust (ELFT) and incorporates NICE and other relevant guidelines to ensure best practice and optimum physical and mental health care for patients requiring antipsychotic medication.

The antipsychotics that are covered are listed in Table 1.

Clozapine is excluded from these guidelines and covered by the Clozapine Policy which is available on the intranet.

Table 1: List of antipsychotics and formulary status

Typical Antipsychtoics	**Formulary Status**	**Atypical Antipsychotics**	**Formulary Status**
Benperidol*		**Amisulpride**	GREEN
Chlorpromazine	GREEN	**Aripiprazole**	Oral, injection GREEN LAI AMBER
Flupenthixol ± decanoate	GREEN	**Lurasidone**	AMBER
Haloperidol ± decanoate	GREEN	**Olanzapine**	Oral, injection GREEN LAI AMBER
Levomepromazine*		**Paliperidone**	Oral and LAI AMBER
Pericyazine*		**Quetiapine**	GREEN
Pimozide*	AMBER		
Prochlorperazine*	RED		
Promazine*	GREEN		
Sulpride	GREEN		
Trifluoperazine*	GREEN		

Zuclopenthixol ± decanoate ± acetate (Acuphase)	GREEN		
Fluphenazine decanoate	GREEN		

*Not routinely prescribed or used in secondary care for treatment of psychosis/schizophrenia
Information on licenced indication, dosage and formulations can be found in the BNF (https://bnf.nice.org.uk/) and Electronic Medicines Compendium (EMC) (https://www.medicines.org.uk/emc#gref)

3.0 Responsibility of the prescriber:

3.1 To perform baseline tests before starting an antipsychotic and to monitor until the patient's condition has stabilised. See section 5.0 and 6.0.
3.2 At reasonable intervals and when the patient condition is stable to send relevant information on mental state and physical health monitoring (including baseline tests) to primary care.
3.3 To monitor patient for side effects of antipsychotics including physical manifestations e.g. weight gain, serum lipid and glucose abnormalities.
3.4 When inpatients are discharged from hospital on antipsychotics, a discharge notification and/or summary will be provided.
3.5 For community patients, a written letter with relevant information will be sent to primary care when patient's condition has stabilised.
3.6 To provide verbal and written information to patient on prescribed medication.
3.7 To offer all patients taking antipsychotics access or signposting to physical health promoting activities.
3.8 To inform GP of any change in medication or if medication is to be stopped.
3.9 To inform the GP if a patient is prescribed clozapine.

4.0 Choosing an antipsychotic:

The NICE clinical guideline on medicines adherence [CG76] 2009 encourages offering service users the opportunity to be involved in decisions made about their medicines. Healthcare professionals are advised to explain the aims of treatment and discuss the pros and cons of proposed medicines. (3) This applies to all areas of healthcare but can be especially important in choosing antipsychotics. (4)

NICE CG178 advises that those with a first episode of psychosis if offered oral antipsychotic medication in conjunction with psychological interventions such as cognitive behavioural therapy (CBT). Due to the risk of side effects as stated in the introduction, people with psychosis or schizophrenia, especially those taking antipsychotics should be offered a combined healthy eating and physical activity programme by their healthcare provider. Also, offer support to stop smoking if appropriate, taking into consideration the effect that smoking cigarettes can have on the metabolism of some antipsychotics.

When choosing an antipsychotic, the aim is to try to choose a medicine that is safest for a particular patient, with side effects that are most acceptable to them. It is difficult to predict how well a particular person will respond to a particular antipsychotic medicine. (5) The relative side effect profile of different antipsychotics can be found in appendix 2. The lowest effective dose of an antipsychotic medication should be used.

In general, first generation antipsychotics have a significant effect on acetylcholine, histamine, norepinephrine and serotonin pathways and cause extrapyramidal side effects (EPSEs) whereas second generation antipsychotics are more associated with metabolic side effects such as weight gain and glucose intolerance. (6)

5.0 Guidelines for the monitoring of antipsychotics

5.1 These guidelines are based on best practice, NICE recommended monitoring of antipsychotics.

5.2 When antipsychotics are initiated, baseline measurements should be taken in secondary care. People with a psychotic disorder should remain under the responsibility of the secondary care team for the first 12 months, or until their condition has stabilised; whichever is longer.

5.3 It is recognised that due to the nature of individual's illness and the levels of engagement, that it may not be possible or practical to complete all monitoring but that attempts should be made to complete. If indicators are omitted this should be documented with the reason why.

Baseline	**Weekly for first 6 weeks**	**At 12 weeks**	**At 12 months**	**Annually**	**Considerations**
Weight, height (BMI)	Weight (BMI) (Height CAMHS ONLY)	Weight (BMI) (Height CAMHS ONLY)	Weight (BMI) (Height CAMHS ONLY)	Weight (BMI) (Height CAMHS ONLY)	Abnormal result BMI ≥ 25kg/m2 (23 if Asian) And/or weight gain >5kg over three months Lifestyle adice Medication review See NICE clinical guideline CG43: Obestity prevention (7)
BP Pulse		BP Pulse	BP Pulse	BP Pulse	Abnormal result >140mmHg systolic and /or 90mmHg diastolic Most adults have a resting heart rate between 60 and 100 bpm. Pulse and BP during dose titration and at each dose change (not needed for amisulpride, sulpride, aripiprazole and trifluoperazine) Lifestyle advice Medication review Consider antihypertensive therapy Limit salt intake

					See NICE guideline NG136: Hypertension in adults (8)
Glucose (Ideally fasting but otherwise random) HbA1c		Glucose (ideallyFasting plasma glucose (FPG), but otherwise Random Plasma Glucose (RPG) HbA1c	Glucose (ideally Fasting plasma glucose (FPG), but otherwise Random Plasma Glucose (RPG) HbA1c	Glucose (ideallyFasting plasma glucose (FPG), but otherwise Random Plasma Glucose (RPG) HbA1c	HbA1c or glucose threshold: HbA1c ≥ 42mmol/L And/or FPG ≥ 5.5mmol/L pr RPG ≥11.1mmol/L Lifestyle advice Medication review GP review NICE guidelines [NG17 and NG28] for diabetes: Type 1 diabetes in adults (9) and Type 2 diabetes in adults (10)
Lipid Screen				Lipid screen	Abnormal result Total cholesterol >6.0mmol/L or high risk of CVD (>10% QRISK score) Lifestyle advice Medication review NICE clinical guideline [CG181] for lipid modification in CVD disease and diabetes
Prolactin				Prolactin ** *Prolactin at 6 month then annually*	Prolactin concentration interpretation according to Maudsley Prescribing Guidelines (13th edition): Normal: 0 – 530 mIU/L (women) 0 – 424 mIU/L (men) Elevated: 530 – 2500 mIU/ml Highly elevated: >2500 mIU/ml Assess prolactin-related adverse effects ** Consider dose reduction or

					adjunct with aripiprazole
TFTs			TFTs	TFTs	Consider the impact of antipsychotic Refer if necessary to GP / appropriate secondary care team
FBC			FBC	FBC	Consider impact of antipsychotic Refer if necessary to GP / appropriate secondary care team
U&Es			U&Es	U&Es	Consider impact of antipsychotic Refer if necessary to GP / appropriate secondary care team
LFTs			LFTs	LFTs	Consider impact of antipsychotic Refer if necessary to GP / appropriate secondary care team
ECG*			ECG*	ECG*	Also after dose changes Abnormal result QTc interval: >440ms (men), >470ms (women) Medication review QTc >500ms: treatment should be withdrawn
Creatinine Kinase					If neuromalignant syndrome (NMS) is suspected

Assessment of any movement disorders	Regularly throughout treatment Assessment of any movement disorders, or side effects of treatment	
Assessment of nutritional status, diet and level or physical activity	Regularly throughout treatment Overall physical health	5
Mental State	Regularly throughout treatment Response to treatment, including change in symptoms and behaviour	

*

1. Specified in SPC (Haloperidol, Pipotiazine)
2. the service user has identified specific cardiovascular risk (such as diagnosis of high blood pressure)
3. the service user has a personal history of cardiovascular disease,
4. the service user is on other drugs that could also prolong QT interval,
5. the service user is being admitted as an inpatient.
6. the service user is on high dose antipsychotic therapy (> 100% BNF max) (this could be one or multiple antipsychotics)

**PROLACTIN if:
Any signs or symptoms of hyperprolactinaemia (MEN:Gynaecomastia, Impaired Libido, Erectile Dysfunction, Diminished Ejaculate Volume,
Oligospermia, WOMEN: Oligo- Or Amenorrhoea, Anovulation, Loss Of Libido, Galactorrhoea,)

6

6.0 Monitoring of antipsychotic side effects

Assess patients at baseline for any signs of movement disorders. Movement disorders and other antipsychotic side effects will also be assessed regularly throughout treatment by discussion with the patient.

Commonly used scales that may aid discussion with patient include the Liverpool University Neuroleptic Side Effect Rating Scale (LUNSERS – Appendix 5) or the Glasgow Antipsychotic Side Effect Rating Scale (GASS - Appendix 3)

7.0 Monitoring of high dose antipsychotics

A possible link has been postulated between antipsychotic drugs and ventricular tachycardia and sudden death but no consensus has been achieved on the frequency of these events, the contribution of high dosage, or even whether a true causal association exists. To reduce the risk of arrhythmia, all patients should be assessed (including ECG) for cardiovascular disease prior to the institution of antipsychotic drug therapy. Periodic monitoring of the electrocardiogram (ECG), and electrolytes during therapy is advocated when high-dose antipsychotic drug treatment is used.

High dose antipsychotics is assessed by adding together the doses of each drug expressed as a percentage of their respective BNF maximum dose and where this exceeds 100%, the patient is considered to be receiving a “high-dose”.

Eg Olanzapine 20mg daily,(20mg/20mg*100=75%) + haloperidol 5mg daily, (5mg/20mg*100=25%) = 125%

Monitoring should occur at baseline and at regular intervals including after dose changes (minimum every three months), which may be reduced to once per year if patient maintained on stable dose of antipsychotic.

Monitoring should include an ECG, U&Es, LFTs, Blood pressure and pulse and temperature.

8.0 References:

1) Joint Formulary Committee. British National Formulary [Internet]. London: British Medical Association and Royal Pharmaceutical Society of Great Britain; [updated 2021 April 29; cited 2021 May 13]. Available from: https://bnf.nice.org.uk/
2) National Institute for Health and Care Excellence. Psychosis and schizophrenia in adults: prevention and management [Internet]. [London]: NICE; 2014 [updated 2014 Mar; cited 2021 May 14]. (Clinical guideline [CG178]). Available from: https://www.nice.org.uk/guidance/cg178
3) National Institute for Health and Care Excellence. Decision making and mental capacity [Internet]. [London]: NICE; 2020 Aug; cited 2021 May 14 Quality Standard 194 [QS184]. Available from: https://www.nice.org.uk/guidance/qs194
4) National Institute for Health and Care Excellence. Medicines adherence: involving patients in decisions about prescribed medicines and supporting adherence [Internet]. [London]: NICE; 2009 [updated 2014 Mar; cited 2021 May 14]. (Clinical guideline [CG76]). Available from: https://www.nice.org.uk/guidance/cg76/chapter/1-Guidance#patient-involvement-in-decisions-about-medicines
5) Taylor, David M, et al. The Maudsley Prescribing Guidelines in Psychiatry 13th Edition. 2019
6) Royal College of Psychiatrists. Antipschotics 2019. Accessed 2021. Available at: https://www.rcpsych.ac.uk/mental-health/treatments-and-wellbeing/antipsychotics
7) National Institute for Health and Care Excellence. Available antipsychotics [internet]. [London]: NICE CKS 2021 [cited 2021 May 28]. Available from: https://cks.nice.org.uk/topics/psychosis-schizophrenia/prescribing-information/available-antipsychotics/
8) National Institute for Health and Care. Obesity prevention [internet]. [London]: NICE 2006 [updated 2015 Mar; cited 2021 May 28]. (Clinical guideline [CG43]). Available from: https://www.nice.org.uk/guidance/CG43
9) National Institute for Health and Care. Hypertension in adults: diagnosis and management [internet]. [London]: NICE 2019 Aug [cited 2021 May 28]. (Clinical guideline [CG 136])Available from: https://www.nice.org.uk/guidance/ng136
10) National Institute for Health and Care. Type 1 diabetes in adults: diagnosis and management [internet]. [London]: NICE 2015 [updated 2020 Dec 16; cited 2021 May 28]. (Clinical guideline [CG17]). Available from: https://www.nice.org.uk/guidance/ng17
11) National Institute for Health and Care. Type 2 diabetes in adults: management [internet]. [London]: NICE 2015 [updated 2020 Dec 16; cited 2021 May 28]. (Clinical guideline [CG28]). Available from: https://www.nice.org.uk/Guidance/NG28

Appendices:

Appendix 1: Psychotropic-related QT prolongation

Many psychotropic drugs are associated with ECG changes and some are linked to serious ventricular arrhythmia and sudden cardiac death. The risk of death is likely to be dose related; although the absolute risk is low, it is substantially higher than the risk for fatal agranulocytosis with clozapine.

ECG monitoring is essential for all patients prescribed antipsychotics as recommended by NICE schizophrenia guideline and at a yearly check-up if previous abnormality or additional risk factors such as high dose antipsychotic prescribing defined as greater than 100% BNF maximum (single or combined therapy).

The cardiac QT interval is a useful but an imprecise indicator of risk of torsade de points and of increased cardiac mortality.

Table 3: showing Effects of psychotropic drugs on QTc

No effect	Low effect	Moderate effect	High effect	Unknown effect
Antipsychotics				
Cariprazine	Aripiprazole	Amisulpride	Any intravenous antipsychotic	Pipotiazine
Lurasidone	Asenapine	Chlorpromazine	Pimozide	Trifluoperazine
Brexpiprazole	Clozapine	Haloperidol	Sertindole	Zuclopenthixol
	Flupentixol	Iloperidone	Any drug or combination of drugs used in doses exceeding recommended maximum	
	Fluphenazine	Levomepromazine		
	Loxapine	Melperone		
	Perphenazine	Quetiapine		
	Prochlorperazine	ziprasidone		
	Olanzapine			
	Paliperidone			
	Risperidone			
	Sulpride			
Antidepressants				
Duloxetine	Citalopram	Clomipramine	Amitriptyline	
Fluvoxamine	Escitalopram	Fluoxetine	Desipramine	
Mirtazapine	Mianserin		Doxepin	
Paroxetine	Trazodone		Imipramine	
Reboxetine	Venlafaxine		Maprotiline	
Sertraline			Nortriptyline	
Trimipramine				

Table 1,24 pg 114 The Maudsley Prescribing Guidelines 13th Edition, Taylor et al
3.2 Cardiovasular disease pg 242 The Psychotropic Drug Directory 2018, Stephen Bazire

Appendix 2: Antipsychotic side effect table

Relative adverse effects of antipsychotic drugs

Drug	Sedation	Weight Gain	Diabetes	Extra-pyramidal side effects	Anti - cholinergic	Hypotension	Prolactin
Amisulpride	-	+	+	+	-	-	+++
Aripiprazole	-	-	+	-	-	-	-
Asenapine	+	+	+/-	+/-	-	-	+/-
Benperidol	+	+	+/-	+++	+	+	+++
Chlorpromazine	+++	++	++	++	++	+++	+++
Clozapine	+++	+++	+++	-	+++	+++	-
Flupentixol	+	++	+	+++	++	+	+++
Fluphenazine	+	+	++	+++	+	+	+++
Haloperidol	+	+	+	+++	+	+	+++
Iloperidone	-	++	+	+	-	+	-
Loxapine	++	+	+	+++	+	++	+++
Olanzapine	++	+++	+++	-	+	+	+
Paliperidone	+	++	+	+	+	++	+++
Perphenazine	+	+	++	+++	+	+	+++
Pimozide	+	+	-	+	+	+	+++
Pipothiazine	++	++	++	++	++	++	+++
Promazine	+++	++	++	+	++	++	++
Quetiapine	++	++	++	-	+	++	-
Risperidone	+	++	++	+	+	++	+++
Sertindole	-	+	+	-	-	+++	-
Sulpride	-	+	+	+	-	-	+++
Trifluoperazine	+	+	++	+++	+	+	+++
Ziprasidone	+	-	-	-	-	+	+
Zuclopenthixol	++	++	+	++	++	+	+++

+++high incidence/severity; ++moderate; +low; -very low

Table 1.8 pg 39 and table 1.30 pg 126 The Maudsley Prescribing Guidelines 13th Edition, Taylor et al

Appendix 3: Glasgow Antipsychotic Side-effect Scale (GASS)

Name: **Age:** **Sex: M / F**

List current medication and total daily doses below:

This questionnaire is about how you have been recently. It is being used to determine if you are suffering from excessive side effects from your antipsychotic medication.

Please place a tick in the column which best indicates the degree to which you have experienced the following side effects.

Also tick the **end or last** box if you found that the side effect was distressing for you.

Over the past week:	**Never**	**Once**	**A few times**	**Everyday**	**Tick this box if distressing**
1) I felt sleepy during the day					
2) I felt drugged or like a zombie					
3) I felt dizzy whne I stood up and / or have fainted					
4) I have felt my heart beating irregularly or unusually fast					
5) My muscles have been tense or jerky					
6) My hands or arms have been shaky					
7) My legs have felt restless and / or I couldn't sit still					
8) I have been drooling					
9) My movements					

or walking have been slower than usual					
10) I have had uncontrollable movements of my face or body					
11) My vision has been blurry					
12) My mouth has been dry					
13) I have had difficulty passing urine					
14) I have felt like I am going to be sick or have vommitted					
15) I have wet the bed					
16) I have been very thirsty and / or passing urine frequently					
17) The areas around my nipples have been sore and swollen					
18) I have noticed fluid coming from my nipples					
19) I have had problems enjoying sex					
20) Men only: I have had problems getting an erection					

Tick yes or no for the last three months:

	No	Yes	Tick this box if distressing
21) **Women only:** I have noticed a change in my periods			
22) **Men and women**: I have been gaining weight			

Staff Information

1. Allow the patient to fill in the questionnaire themselves. All questions relate to the previous week.

2. Scoring
   For questions 1-20 award

   1 point for the answer “once”,

   2 points for the answer “a few times”

   3 points for the answer “everyday”.

   Please note zero points are awarded for an answer of “never”.

   For questions 21 and 22 award 3 points for a “yes” answer and 0 points for

   a “no”. Total for all questions=

3. For male and female patients with a score of:

0-21	absent/mild side effects
22-42	moderate side effects
43-63	severe side effects

4. Side effects covered include:
   1-2 sedation and CNS side effects

11

3-4 cardiovascular side effects
5-10 extra pyramidal side effects
11-13 anticholinergic side effects
14 gastro-intestinal side effects
15 genitourinary side effects
16 screening question for diabetes mellitus
17-21 prolactinaemic side effect
22 weight gain

The column relating to the distress experienced with a particular side effect is not scored, but is intended to inform the clinician of the service user's views and condition.

Appendix 4: Neuroleptic Malignant Syndrome

This is a rare side effect but the patient needs to be referred to A & E immediately for supportive therapy. Symptoms include

- Labile blood pressure
- Extrapyramidal side effects
- High temperature
- Autonomic dysfunction
- Severe rigidity
- Confusion
- Raised CK

APPENDIX 5

Rating Scales for antipsychotic-induced side effects

Liverpool University Neuroleptic Side-effect Rating Scale (LUNSERS)

What is it ?
The LUNSERS is a fully reliable and validated means of assessing neuroleptic side effects. It includes 41 known side-effects of antipsychotic medication and 10 “red herring” items, such as hair loss and chill blains.

Who are the raters ?
The patients themselves.

How long does it take?
Between 20 and 30 minutes.

How do you use it?
Each side-effect is rated on a 5-point scale where : 0 = not at all, 1 = very little, 2 = a little, 3 = quite a lot, 4 = very much.

The red herring items are numbers 3, 8, 11, 12, 25, 28, 30, 33, 42 and 45. These should be scored separately as this score may indicate individuals who over score generally on this scale.

The sum of the “red herring” scores should be deducted from the total; this gives the “real” antipsychotic side effect score.

When should it be done ?
LUNSERS can be used at any time to assess the severity of antipsychotic-induced side effects. It may be useful to use it after antipsychotic medication has been changed because of intolerance to adverse effects to previous medication.

Interpretation of results ?

East London NHS
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Liverpool University Neuroleptic Side-effect Rating Scale (LUNSERS)

Please indicate how much you have experienced each of the following symptoms in the last month by ticking the appropriate box

Symptoms		Not at all 0	Very little 1	A little 2	Quite a lot 3	Very much 4
1.	Rash	☐	☐	☐	☐	☐
2.	Difficulty staying awake during the day	☐	☐	☐	☐	☐
3.	Runny nose	☐	☐	☐	☐	☐
4.	Increased Dreaming	☐	☐	☐	☐	☐
5.	Headaches	☐	☐	☐	☐	☐
6.	Dry mouth	☐	☐	☐	☐	☐
7.	Swollen or tender chest	☐	☐	☐	☐	☐
8.	Chillblains	☐	☐	☐	☐	☐
9.	Difficulty in concentrating	☐	☐	☐	☐	☐
10.	Constipation	☐	☐	☐	☐	☐
11.	Hair loss	☐	☐	☐	☐	☐
12.	Urine darker than usual	☐	☐	☐	☐	☐
13.	Period problems	☐	☐	☐	☐	☐
14.	Tension	☐	☐	☐	☐	☐

Liverpool University Neuroleptic Side-effect Rating Scale (LUNSERS)

Please indicate how much you have experienced each of the following symptoms in the last month by ticking the appropriate box

Symptoms		Not at all 0	Very little 1	A little 2	Quite a lot 3	Very much 4
15.	Dizziness	☐	☐	☐	☐	☐
16.	Feeling sick	☐	☐	☐	☐	☐
17.	Increased sex drive	☐	☐	☐	☐	☐
18.	Tiredness	☐	☐	☐	☐	☐
19.	Muscle stiffness	☐	☐	☐	☐	☐
20.	Palpitations	☐	☐	☐	☐	☐
21.	Difficulty in remembering things	☐	☐	☐	☐	☐
22.	Losing weight	☐	☐	☐	☐	☐
23.	Lack of emotions	☐	☐	☐	☐	☐
24.	Difficulty in achieving climax	☐	☐	☐	☐	☐
25.	Weak fingernails	☐	☐	☐	☐	☐
26.	Depression	☐	☐	☐	☐	☐
27.	Increased sweating	☐	☐	☐	☐	☐

28.	Mouth ulcers	☐☐☐☐☐				

Liverpool University Neuroleptic Side-effect Rating Scale (LUNSERS)

Please indicate how much you have experienced each of the following symptoms in the last month by ticking the appropriate box

Symptoms		Not at all 0	Very little 1	A little 2	Quite a lot 3	Very much 4
29.	Slowing of movements	☐	☐	☐	☐	☐
30.	Greasy skin	☐	☐	☐	☐	☐
31.	Sleeping too much	☐	☐	☐	☐	☐
32.	Difficulty passing ater	☐	☐	☐	☐	☐
33.	Flushing of face	☐	☐	☐	☐	☐
34.	Muscle spasms	☐	☐	☐	☐	☐
35.	Sensitivity to sun	☐	☐	☐	☐	☐
36.	Diarrhoea	☐	☐	☐	☐	☐
37.	Over-wet or drooling mouth	☐	☐	☐	☐	☐
38.	Blurred vision	☐	☐	☐	☐	☐
39.	Putting on weight	☐	☐	☐	☐	☐
40.	Restlessness	☐	☐	☐	☐	☐
41.	Difficulty in getting to sleep	☐	☐	☐	☐	☐

42.	Neck muscles aching	☐	☐	☐	☐	☐
43.	Shakiness	☐	☐	☐	☐	☐

Liverpool University Neuroleptic Side-effect Rating Scale (LUNSERS)

Please indicate how much you have experienced each of the following symptoms in the last month by ticking the appropriate box

Symptoms		Not at all 0	Very little 1	A little 2	Quite a lot 3	Very much 4
44.	Pins and needles	☐	☐	☐	☐	☐
45.	Painful joints	☐	☐	☐	☐	☐
46.	Reduced sex drive	☐	☐	☐	☐	☐
47.	New or unusual marks on skin	☐	☐	☐	☐	☐
48.	Parts of body moving of their own accord e.g foot moving up and down	☐	☐	☐	☐	☐
49.	Itchy skin	☐	☐	☐	☐	☐
50.	Periods less frequent	☐	☐	☐	☐	☐
51.	Passing a lot of water	☐	☐	☐	☐	☐

Your name:

Date:

Liverpool University Neuroleptic Side-effect Rating Scale (LUNSERS)

Score sheet

Name of patient:

Date of assessment	Medication / dose	LUNSERS score		"Real" score
		Total	Minus red herrings (3,8,11,12,25,28, 30,33,42,45)	

Interpretation of score: