

Appendix 2 - GUIDE TO USING THE ANTIPSYCHOTIC PHYSICAL HEALTH MONITORING CHART

A. WHO THE CHART IS FOR

- Any child or adolescent who is initiating or currently being administered antipsychotic medication where treatment is likely to be long term e.g. greater than a few months

B. WHERE TO GET THE CHART

- Charts can be ordered as a stationary line from the Women's and Children's Hospital (WCH) printer (order on a blue "Printing Requisition" form)
- Various clinical areas of the hospital may then keep on hand for use
- Before initiating a new chart, check in the "Medication" section of the patient's case notes whether a current monitoring chart is in use
- Check with the patient or referring doctor whether a chart is in use outside the WCH and if so, endeavour to obtain a copy so that the current status of monitoring can be obtained and avoid unnecessary tests

C. WHERE THE CHARTS GO AFTER USE

- Place the **original** chart in the patient's case notes after use
- When patients are in inpatient units, the current chart may be placed with the current medication chart for easy use and then filed in the "Medication" section of the case notes after discharge
- On discharge a **copy** of the chart should be sent to the patient's follow-up doctor with the discharge letter

D. HOW TO FILL IN THE CHART

- For all new charts place a patient medical record sticker (or write in patient details if being used outside of the WCH) at the top of the chart
- A new chart should be started when either;
 - Initiating an antipsychotic,
 - Switching to a different antipsychotic,
 - Ongoing use of an antipsychotic
 - and commencing the monitoring chart for the first time (in this instance a true baseline can't be obtained unless good retrospective data available in casenotes)
 - and previous chart is full
- Refer to "User Guide" at the top of the first page of the monitoring chart for information on where to start depending on situation
- Refer to the heading box (shaded black) in each section of the monitoring chart for information on how often to do the monitoring
 - Any data boxes shaded black indicate monitoring is not required for a given time point

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D. HOW TO FILL IN THE CHART (cont.)

Chart Data

- Write in the name of the current antipsychotic(s) being used
- Write in the number of charts that have been used for the individual patient, with new charts numbered sequentially
- Write in the date the chart started
- Tick the appropriate box when starting a new chart whether “Initiating”, “Switching” or “Ongoing”

1. Risk factors

- More frequent monitoring of weight, BMI, blood pressure, blood glucose, blood lipids and liver function may be required if the patient has any of the specified risk factors
- Write in race if ethnicity is a risk factor for developing diabetes e.g. Indigenous Australian, Pacific Islander, Asian, African American etc
- Write in other medications (prescribed, over the counter (OTC), complementary or illicit) that may contribute to adverse effects directly or through drug interactions

2. Measures Recommended

2.1 Body weight, BMI, BMI for age percentiles and BMI z score

- Young people who take antipsychotics (particularly some atypical antipsychotics) are susceptible to weight gain, especially in the early stages of treatment
- **BMI** should be obtained for monitoring weight changes, as it is a more sensitive parameter than measuring weight alone and calculated;
 - manually i.e. $BMI = \frac{\text{weight (kg), or}}{\text{height}^2 \text{ (m}^2\text{)}}$
 - using a website that calculates BMI e.g.
 - <http://www.kidsnutrition.org/bodycomp/bmiz2.html>
 - <http://www.cdc.gov/nccdphp/dnpa/bmi/calc-bmi.htm#Metric>
 - <http://nhlbisupport.com/bmi/bmi-m.htm>
- **BMI for age percentiles according to gender** should be obtained as it allows for norms that change with age and gender and calculated by;
 - using BMI-for-age percentile charts specific for boys and girls 2 to 20 years of age where a BMI above the 85th percentile is indicative of overweight and a BMI above the 95th percentile is indicative of obesity
 - such charts are in the Children, Youth and Women’s Health Service (CYWHS) case notes or available from the Centers for Disease Control and Prevention (CDC) and easily accessible through the following websites;
 - Boys: <http://www.cdc.gov/nchs/data/nhanes/growthcharts/set1/chart15.pdf>
 - Girls: <http://www.cdc.gov/nchs/data/nhanes/growthcharts/set1/chart16.pdf>
 - using a website that calculates BMI percentile for sex and age e.g.
 - <http://www.kidsnutrition.org/bodycomp/bmiz2.html> or

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- using a free software program called “Epi Info” using the module called Nutstat that is available for download at: <http://www.cdc.gov/epiinfo>
 - download “setup.exe” which will place Epi Info on desktop
 - open Epi Info and look in “Nutrition” in the program menu
 - under “Options” in the tools menu need to change
 - units to metric
 - display to calculate BMI
 - reference to CDC 2000
- **BMI z scores** allow a more detailed statistical description of obese children who are above the 97th percentile for BMI for their age and gender and calculated;
 - as above using a web based program e.g. <http://www.kidsnutrition.org/bodycomp/bmiz2.html> or
 - as above using the free software program called “Epi Info” using the module called Nutstat, which is available for download at <http://www.cdc.gov/epiinfo>
- **Results that may cause concern and trigger an alert for appropriate interventions include;**
 - **a > 5% weight gain within the first 3 months (height unlikely to play a major role)**
 - **a ≥ 0.5 increase in BMI z score**
 - **crossing into being overweight i.e. a ≥ 85th to < 95th BMI percentile plus one adverse health consequence e.g. hyperglycaemia, dyslipidaemia, hypertension, hyperinsulinaemia**
 - **crossing into obesity i.e. a ≥ 95th BMI percentile**

2.2 Blood pressure

- Monitoring is recommended to monitor for increasing blood pressure (BP) which increases cardiovascular risk
 - BP should be measured preferably after 10 minutes rest in the sitting position, using an appropriate sized cuff, with the young person as quiet and relaxed as possible
 - the BP of children and adolescents can be checked against BP percentile charts, which show systolic and diastolic BP levels at 95th percentile for boys and girls aged up to 18 years of age
- Note that many antipsychotics can cause postural hypotension, especially at the start of therapy

3. Blood Tests Recommended

3.1 Blood glucose

- Fasting plasma glucose (FPG) is recommended
- Where a FPG is not possible, a random blood glucose (RBG) may be done but needs to be clearly documented that it was not a fasting level

3.2 Lipid profile

- Due to lower risks in children and adolescents, monitoring total cholesterol and triglycerides levels is recommended rather than a complete lipid profile
- If any abnormalities are detected, a complete lipid profile is recommended

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3.3 Haematology

- Decreases in the white blood cell count and other blood dyscrasias can occur during treatment with any antipsychotic
- Haematological adverse effects are
 - not common and rarely clinically significant
 - more likely to occur during the first 2 months of antipsychotic therapy
 - more frequent monitoring may be required if patients develop fever, flu-like symptoms, pallor or bruising, especially if it occurs shortly after treatment initiation.
- The monitoring chart recommendations **do not apply for patients prescribed clozapine**
 - due to the risk of potentially fatal agranulocytosis, **patients taking clozapine have a mandatory blood monitoring protocol** involving weekly monitoring for the first 18 weeks then monthly thereafter and these results are recorded elsewhere with either the Clozaril^R or Clopine^R Patient Monitoring Systems

3.4 Liver function

- Transient, asymptomatic elevations of hepatic transaminases occur occasionally with some antipsychotics, especially in early treatment
- Some antipsychotics have been reported to cause hepatotoxicity, particularly in youth who are obese
 - if symptoms of liver dysfunction such as nausea, vomiting and/or anorexia develop, liver function tests should be performed immediately
 - if there is a clinically relevant elevation in liver function values or if symptoms of jaundice occur, treatment should be discontinued
 - more frequent monitoring should be conducted if there is significant weight gain or indications of any abnormalities in the liver function tests

3.5 Urea and electrolytes

- Electrolyte imbalances (e.g. hypokalaemia, hypomagnesaemia and hypocalcaemia) increase the risk of prolongation of the QT interval and cardiac arrhythmia with some antipsychotics
- The syndrome of inappropriate secretion of antidiuretic hormone (SIADH) has also been reported with some antipsychotics and monitoring sodium levels may be useful

4. Questions to Ask

4.1 Extrapyramidal side effects

- The incidence of extrapyramidal side effects (EPSEs) in those who use antipsychotics is higher in;
 - children and adolescents compared to adults (sometimes with antipsychotics that rarely cause problems in adults)
 - young males compared to young females
- EPSEs can occur with all antipsychotics but are generally more common with all the conventional antipsychotics and risperidone, amisulpride and olanzapine

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- If movement disorders are present at baseline or emerge during antipsychotic treatment, the more complex validated movement scales may be used, especially in specialist settings to more accurately monitor or determine significant problems e.g.
 - Simpson-Angus Scale (SAS) for assessing Parkinsonism (see http://www.cnsforum.com/resources/ratingpsychiatry/side_effects/)
 - Abnormal Involuntary Movement Scale (AIMS) for assessing dyskinesia (see http://www.cnsforum.com/resources/ratingpsychiatry/side_effects/)
 - Barnes Akathisia Rating Scale (BARS) for assessing akathisia (see <http://www.medafile.com/zyweb/Barnes.htm>)

4.2 Hyperprolactinaemia

- Hyperprolactinaemia is generally dose related and more common with risperidone, amisulpride, olanzapine and the conventional antipsychotics
- The current recommendation is to measure prolactin levels only when clinically indicated
 - most clinical symptoms that can be observed occur after puberty and include gynaecomastia, galactorrhoea, amenorrhoea and sexual dysfunction (e.g. loss of libido and fertility, an inability to reach orgasm or ejaculate)
 - other problems that need consideration and may prompt prolactin blood level monitoring or other interventions include the potential for hyperprolactinaemia to
 - to decrease bone mineral density and increase risk of osteoporosis
 - to disrupt normal development in children, leading to delayed pubertal maturation and short stature
- Other possible causes of raised prolactin levels have to be eliminated such as pregnancy, breastfeeding, stress, tumours and other medications
 - extreme elevations in prolactin levels may need investigation for the possibility of a pituitary tumour

5. Additional Monitoring Tables

5.1 Cardiac monitoring for clozapine

- Rare (occasionally fatal) cases of myocarditis presenting early in treatment, and a more delayed cardiomyopathy have been reported in patients on clozapine
- Cardiac monitoring recommendations are often overlooked and so this table is both a reminder and a place to record that this monitoring has been carried out
- Prescribers should be vigilant for signs and symptoms of heart failure

5.2 Prolactin monitoring if clinical symptoms of hyperprolactinaemia are present

- If prolactin level monitoring is deemed necessary, results should be recorded in the table provided

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