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Neuroscience Network

ADOLESCENT
Positive Cardiometabolic Health Resource
An early intervention framework for adolescents on psychotropic medication

	Lifestyle			Obesity		Blood Pressure	Glucose	Blood Lipids	Polycystic Ovary Syndrome
	Smoking	Diet	Activity	Weight, BMI	Waist				
RED ZONE	Current smoker (e.g. tobacco, THC, vaping, shisha) Ask at regular opportunities	Poor diet	Physical activity <60 mins on most days Screentime >2 hrs/day	BMI ≥85th centile* and/or Weight ↑> 5 kg over 3 months	Waist-to-height ratio ≥0.5 and/or Waist ↑>5 cm over 3 months	Blood pressure ≥90th centile systolic and/or diastolic	HbA_{1c} ≥6% (≥42 mmol/mol) FPG ≥5.6 mmol/L	TC ≥5.2 mmol/L LDL ≥3.4 mmol/L HDL <1.0 mmol/L non-HDL≥3.7 mmol/L TRIG ≥1.5 mmol/L	Delayed menarche No menstrual cycle for 3 months Acne Hirsutism
INTERVENTION	Brief advice using Ask, Advise, Help Individualised smoking cessation program quitnow.gov.au icanquit.com.au	↓ Discretionary foods ↑ Vegetables and legumes/beans Consider referral to a Dietitian eatforhealth.gov.au	↓ Sedentariness ↑ Physical activity Physical Activity Guidelines Consider referral to an Exercise Physiologist	Consider metformin If BMI is ≥95th centile* refer to specialist	Limit salt intake in diet Co-management with GP and consider specialist referral	**At High Risk of Diabetes:** HbA_{1c}: 6.0-6.4% (42-47 mmol/mol) FPG 5.6-6.9 mmol/L Consider metformin	**Diabetes:** HbA_{1c} ≥6.5% (≥48 mmol/mol) FPG ≥7.0 mmol/L RPG ≥11.1 mmol/L Endocrine referral	Intensify lifestyle interventions as per the NHLBI Guidelines Co-management with GP and consider specialist referral	Check prolactin Consider metformin Recommend contraception if sexually active, as treatment may restore fertility Endocrine referral
TARGET	Smoking prevention or cessation	Improve quality of diet Contain energy intake (to stabilise weight)	Physical activity ≥60 mins on most, preferably all days Screentime ≤2 hrs/day	Waist-to-height ratio <0.5 BMI <85th centile*	Blood pressure <90th centile	**Prevent or delay onset of diabetes:** HbA_{1c} <6.0% (<42 mmol/mol) FPG <5.6 mmol/L	**Diabetes:** HbA_{1c} individualised to the adolescent's circumstances Generally, HbA_{1c} <6.0-7.0% (42-53 mmol/mol)	TC <4.4 mmol/L LDL <2.8 mmol/L HDL >1.2 mmol/L non-HDL<3.1 mmol/L TRIG <1.0 mmol/L	Regular menstrual cycle

Intensify and individualise structured nutritional counselling and lifestyle interventions. Refer for investigation, diagnosis and treatment by appropriate clinician if necessary.

Medication review (consider antipsychotic switching; review medications and rationalise any polypharmacy).

Lifestyle advice to include diet, physical activity and smoking prevention or cessation. Co-management of physical health with general practitioner is strongly recommended.

*BMI sex-specific centile chart, either US-CDC or WHO. Ensure that the same chart is used over time to allow for consistent monitoring of growth.

BMI = Body Mass Index | FPG = Fasting Plasma Glucose | HbA_{1c} = Glycated Haemoglobin | HDL = High Density Lipoprotein | LDL = Low-Density Lipoprotein | RPG = Random Plasma Glucose | TC = Total Cholesterol | TRIG = Triglycerides

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Access the guide and complete list of references online either by scanning the QR code or by visiting mindgardens.org.au/KBIMResources

History and examination following initiation or change of psychotropic medications

History: Seek history of smoking, poor diet (e.g. high calorie, high fat/sugar), physical activity and sedentariness (e.g. screen time), sleep, and polycystic ovary syndrome. Ask about family history (diabetes, obesity, early CVD), gestational diabetes. Note ethnicity.

Investigations: Fasting estimates of plasma glucose (FPG), HbA1c, and lipids (total cholesterol, LDL, HDL, non-HDL, triglycerides). If fasting samples are impractical then non-fasting samples are satisfactory for most measurements except for triglycerides.

Frequency: At a minimum, those starting or changing antipsychotics should be monitored as below. After 12 months, continue to monitor at 6-month intervals, with increased frequency if abnormalities emerge, which should prompt appropriate action and/or continuing review at least every 3 months.

Monitoring Intervals

	Baseline	Weekly*	3 months	6 months	9 months	12 months	Continue 6 monthly
Personal/Family History	✓					✓	✓
Lifestyle Review	✓	✓	✓	✓	✓	✓	✓
Weight	✓	✓	✓	✓	✓	✓	✓
Waist	✓		✓	✓	✓	✓	✓
Blood pressure	✓		✓	✓		✓	✓
FPG, RPG, HbA_{1c}	✓		✓	✓		✓	✓
Lipid profile	✓		✓	✓		✓	✓
Vitamin D	✓			✓		✓	✓

*Weight should be assessed weekly to fortnightly in the first 6 – 8 weeks following initiation or change of medication. Commencing antipsychotics is a time of particular risk of rapid weight gain and this may predict severe weight gain in the longer term.

Other Considerations:

Other baseline investigations are not included here and need to be performed as clinically required (e.g. TFTs, UECs, FBC, ECHO). Additional monitoring requirements apply for those on mood stabilisers and clozapine (e.g. medication plasma levels). Prolactin measurement is only recommended if symptomatic. Consider ECG/cardiology review if concern regarding QT prolongation or cardiovascular risk factors present.

Some medications used to treat metabolic disorder are contraindicated in pregnancy (e.g. some antihypertensives and lipid lowering drugs). Other issues such as sexual health, blood borne virus screening, oral health, vaccination status, and substance use have not been included in this resource though are important to discuss with all young people.

DON'T JUST SCREEN
INTERVENE
for all people in the 'red zone'

Decision making surrounding screening and agreed interventions should be made with the young person and family/carers, and include consultation with key stakeholders (e.g. general practitioner, paediatricians, mental health clinicians, and community providers).

Review of antipsychotic and mood stabiliser medications

- Choose lower metabolic liability medication first line where possible
- Review diagnosis and ensure ongoing need for all psychotropic medications
- Consider switching to a more weight neutral medication where possible
- Avoid antipsychotic polypharmacy
- Avoid off-label use of antipsychotic medications
- Changing antipsychotic medication requires careful clinical judgement to weigh any benefits against the risk of relapse of psychosis

Review should be a priority if there is:

- Rapid weight gain (e.g. 5 kg < 3 months) following antipsychotic initiation or change
- Rapid development (< 3 months) of abnormal lipids, BP, or glucose

If the young person has not successfully reached targets after 3 months, then consider specific pharmacological interventions

Specific pharmacological interventions

Consider metformin trial for:

- Impaired fasting glucose
- Obesity or rapid weight gain
- Polycystic ovary syndrome

Note that **off-label use** requires documented informed consent

Metformin therapy:

Start at 250 mg before dinner for two weeks, then increase to 250 mg bd. Dose can be increased by 500 mg per week to a maximum of 2 grams daily (taken in split doses with meals). If side-effects of nausea or abdominal cramping, shift to after meal (or the XR preparation)

Lipid lowering therapy:

Consider lipid lowering therapy (use PBS guidelines) if severe hyperlipidaemia or other risk factors, with appropriate specialist referral

Antihypertensive therapy:

Refer to general practitioner or specialist

Vitamin D:

- <50 nmol/L: Cholecalciferol treatment 1,000-2,000 IU daily for 3 months to replenish stores followed by a maintenance dose of 1000 IU daily
- Target: >80 nmol/L

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