A Practical Guide

Sustainable metabolic interventions for patients with mental illness

ccCHiP

CONCORD CENTRE FOR CARDIOMETABOLIC HEALTH IN PSYCHOSIS

Concord Centre for
Cardiometabolic Health
in Psychosis

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Thanks to Central Sydney GP Network for assistance in editing the information provided on pages 51-55: mental health referral pathways and medicare items.

REFERENCES

1. Concord Centre for Cardiometabolic Health in Psychosis (ccCHiP), CCMH
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Contents

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Concord Centre for Cardiometabolic Health in Psychosis (ccCHiP), located within Sydney Local Health Network is a cooperative venture partly funded by NSW Health. We are supported by contributions in kind from Sydney University, Concord Hospital Department of Endocrinology and Metabolism, Concord Hospital Dietetics Department and Australian Diabetes Council. Our clinical service was established by Professor Tim Lambert, Dr Jeff Snars and Associate Professor Roger Chen in 2008. Our clinical model – an integrated service for screening, detection, management and follow up of metabolic disorders among patients with severe mental illness provides models for a replicable, scalable clinical service.

We conduct integrated metabolic clinics for patients with mental illness at Concord Hospital. Our multidisciplinary team is comprised of psychiatrist, endocrinologist, registrar, CNC, dietitian, exercise physiologist, education project manager, and administrative support. Through our integrated clinical laboratory, ccCHiP aims to document the extent of cardiometabolic problems in people with mental illness and develop strategies to ensure sustained improvements in their health utilising the network of primary and specialist care systems.

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Concord Centre for Cardiometabolic Health in Psychosis

Executive Summary

- Cardiometabolic risk screening is obligatory for those treated with psychotropic medications, is cheap, simple to master, and easy to get started.
- Treatment options to manage cardiometabolic risk factors (CMRF's) once detected are sub-optimal for patients with severe mental illness (SMI).
- There are a range of simple interventions that can easily be implemented.
- Moving beyond screening to integrated intervention models with routine follow up will be more challenging, and systematic service changes will be necessary.
- Unless our nation's health services take the steps to systematise tailored physical health care for those with severe mental illness, the wide gap to equal health outcomes will not be changed.
- This service manual aims to present the main factors for consideration when establishing sustainable metabolic interventions for patients with mental illness

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Background

Patients with schizophrenia have twice the population risk of death from cardiovascular disease (CVD) [1-3]. For various reasons, diabetes and lipid abnormalities often go undetected in this group [4]. Despite the barriers faced by mental health patients [5]; screening, detection, and intervention are essential to prevent cardiovascular complications [4]. Many patients with mental illness have no systematic general medical care, and though setting up systematised, shared care networks for patients is labour intensive, expensive and difficult to coordinate, it has been previously shown to have positive effects on patient care. [6].

Concord Centre for Cardiometabolic Health in Psychosis (ccCHiP) is a clinical and educational service set up to investigate methods for delivering an integrated health service.

This manual is a practical guide to replicating our metabolic service. Firstly we outline a theoretical approach for screening, detection, management and follow up. This is followed by a guide to the detailed practicalities of setting up such a service.

1. Lambert, T. J. (2009). The medical care of people with psychosis. Med J Aust, 190(4), 171-172.; Lambert, T. J.
2. Hennekens, C. H. (2007). The Journal of clinical psychiatry, 68 Suppl 4, 4-7.
3. Hennekens, C., Hennekens, A., Hollar, D., & Casey, D. (2005). Schizophrenia and increased risks of cardiovascular disease. American heart journal , 150 (6), 1115-21.
4. Sernyak MJ, Gulanski B, Leslie DL, Rosenheck R. (2007) Undiagnosed hyperglycemia in clozapine-treated patients with schizophrenia. Journal of Clinical Psychiatry 2003: 64: 605-608.
5. Lambert T.J & Newcomer, J. W. (2009). Are the cardiometabolic complications of schizophrenia still neglected? Barriers to care. Med J Aust, 190(4 Suppl), S39-42.
6. Meadows G. Establishing a collaborative service model for primary mental health care. MJA. 2003; 178: S53–S56.

A Systems Model for Integrated Health Provision

Monitoring of cardiometabolic risk factors (CMRF's) is best practice for patients with severe mental illness [7-9]. Microvascular changes leading to cardiovascular disease occur early, even before clinical disorders are noted, and so early detection and prevention strategies are crucial to reducing mortality [10]. We recommend that patients with any of the following risk factors should be screened a minimum of six monthly, and those with multiple risk factors (see page 31), three monthly.

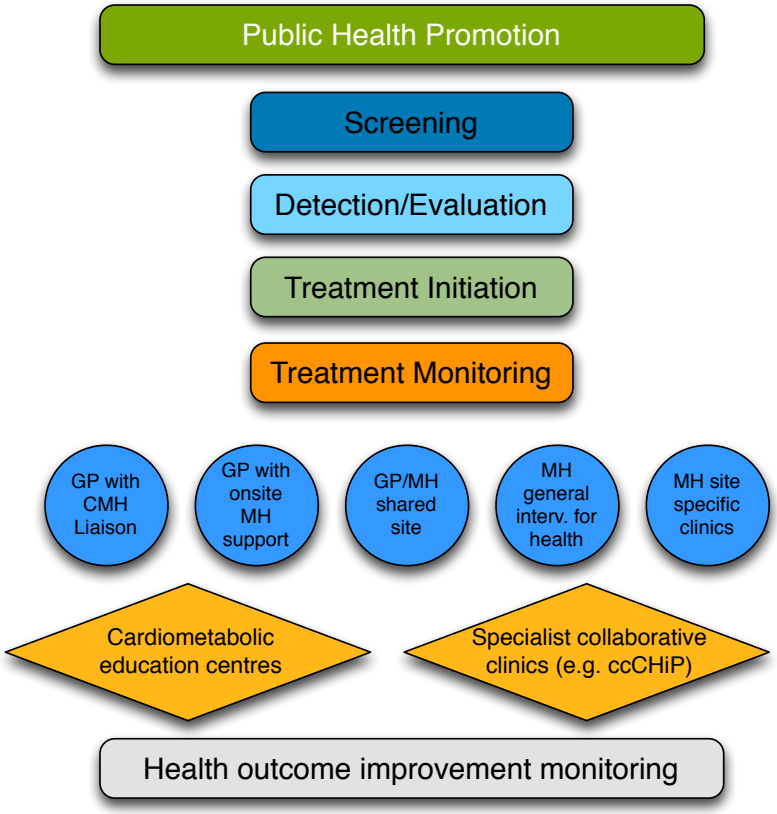
The ccCHiP systems model (Figure 1) demonstrates the range of components needed for the integrated system. Those elements in grey are the core business of any screening and treatment program. The blue circles represent the different relationships that currently exist between primary health care providers and mental health services. The orange diamonds are tertiary referral services who need to involved for more complex patients. The green represents health promotion, which is a crucial area currently largely implemented by consumer groups.

Our current recommendations for screening are in accord with Endocrinology Guidelines eTGA (2009) and NHMRC Guidelines for Management of Diabetes (2009) [9,11].

A more complete explanation of each of the components from screening through treatment monitoring is outlined in each section through this manual.

7. Lambert T, Chapman L (2004). Consensus statement "Diabetes, psychotic disorders and Antipsychotic Therapy". Accessed online 15/1/10: http://www.open4media.com/ccCHiP/Diabetes_Consensus.html
8. NSW Health Policy (2009). Physical healthcare within mental health service: Accessed online 15/1/10: http://www.health.nsw.gov.au/policies/pd/2009/pdf/PD2009_027.pdf
9. National evidence based guideline for case detection and diagnosis of type 2 diabetes. NHMRC Guidelines 2009. Accessed online 15/1/10: http://www.nhmrc.gov.au/_file_publications/synopses/di17-diabetes-detection-diagnosis.pdf
10. Gaede P, Vedel P, Larsen N et al. (2003). Multifactorial intervention and cardiovascular disease in patients with type 2 diabetes. New England Journal of Medicine 348: 383-393.
11. Therapeutic Guidelines: Endocrinology. (2009). Accessed online 15/1/10: http://www.tg.org.au/index.php?sectionid=44

Figure 1 | A Systems Model for Integrated Health Provision



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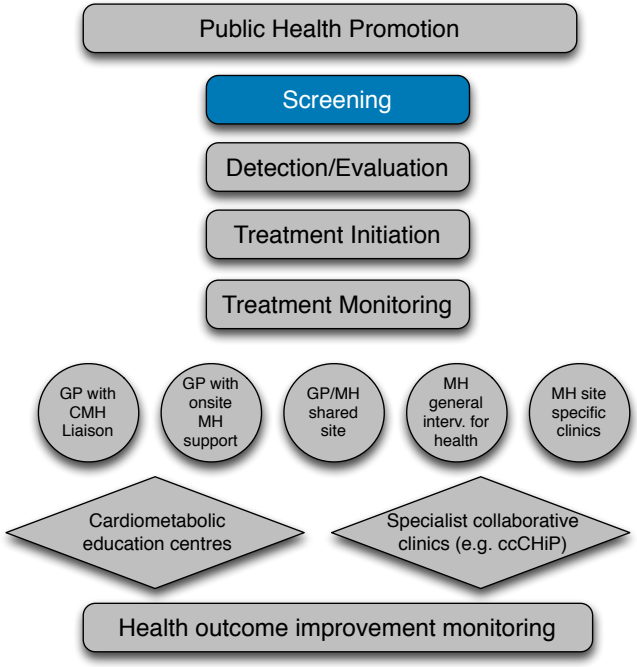
Screening



Concord Centre for Cardiometabolic Health in Psychosis

Table 1 | Defining MetS by the IDF

Central obesity (WC)*		
Ethnicity	Male	Female
Europid	≥94	≥80
S/SE Asian; Chinese; ethnic Sth Americans	≥90	≥80
Japanese	≥85	≥90

Plus any 2 of	
TG	≥1.7 mmol/L#
HDL	<1.03 (M); < 1.29 (F)#
BP	≥130 systolic, or ≥85 diastolic mm Hg †
BSL	≥5.6 mmol/L †

* if BMI≥30, waist measure not needed; # or previous treatment for this condition; † or has been previously diagnosed with condition

12. Alberti KG, Zimmet P, Shaw J. The metabolic syndrome--a new worldwide definition. Lancet. 2005;366: 1059-1062.

Metabolic Syndrome (IDF Definition)

Metabolic Syndrome s defined by the International Diabetes Federation (IDF) as raised waist circumference plus two other abnormalities, (systolic BP ≥ 135 mmHg or diastolic BP ≥ 85 mmHg, fasting BSL ≥ 5.6 mmol/L, TG ≥ 1.7 mmol/L or HDL ≤ 1.03 mmol/L (male) or HDL ≤ 1.29 mmol/L (female). Waist circumference varies by ethnicity, Europid male ≥ 94cm, female ≥ 80cm, Asian male ≥ 90cm, female ≥ 80cm. In our clinical service at ccCHiP we screen inpatients, and provide a multidisciplinary intervention where CMRFs are detected. The rate of Metabolic Syndrome among the patients we have seen is 54% (n=464, mean age 41, mean BMI=30, mean duration of psychiatric illness=13 years).

It is important to note that the IDF cut-offs are indicative of a level of risk, not a level at which medical management is indicated.

Lifestyle treatment should be considered for all those at increased risk. More detail regarding screening each of the risk components is outlined from pages 10-26.

Detail about initiating treatment for each of the risk components is discussed from pages 35-46 of this manual.

Figure 2 | MetS (IDF) incidence: ccCHiP clinics

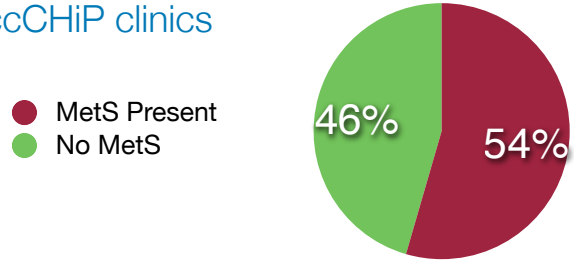
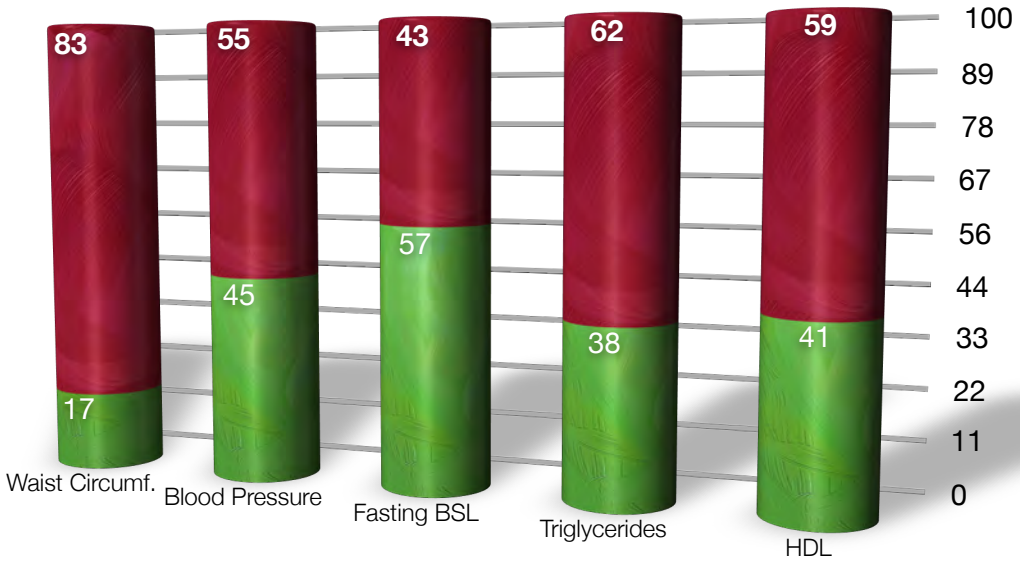


Figure 3 | Rates of metabolic disease among patients reviewed in ccCHiP clinics



ccCHiP dataset May 2011

Concord Centre for Cardiometabolic Health in Psychosis

Cardiometabolic Risk Factors (CMRF's)

Serious mental illness is associated with increased cardiometabolic risks (CMRFs) leading to twice the risk of death from cardiovascular causes compared to the general population. A diagnosis of schizophrenia or bipolar disorder is an independent cardiometabolic risk factor, compounded by the use of medications which contribute to weight gain. Ethnic risk eg. Asian/ SE Asian/Indian Subcontinent/Middle Eastern, lifestyle factors (smoking, sedentary lifestyle, excessive caloric intake), and family history (CVD, obesity, diabetes and psychosis) also contribute [13].

Lipid, blood glucose and blood pressure abnormalities often remain undetected among patients with mental illness, and even when cardiac disorders are detected, their care has been found to be unequal compared to the general population [14]

A multitude of barriers, including stigma, health system, clinician and patient factors all contribute to this inequity [5]. Many of these risk factors are obtainable via history (see pages 23-24), however a full risk assessment will also involve basic examination and blood tests as outlined below.

13.Newcomer JW, Hennekens CH. Severe mental illness and risk of cardiovascular disease. JAMA. 2007;298:1794-1796.
14.Hippisley-Cox J, Parker C, Coupland C, Vinogradova Y. Inequalities in the primary care of patients with coronary heart disease and serious mental health problems: a cross-sectional study. Heart. 2007;93:1256-1262.
5. Lambert TJ, Newcomer JW. Are the cardiometabolic complications of schizophrenia still neglected? Barriers to care. Med J Aust. 2009;190:S39-42.

Levels of Evidence

In assessing the quality of evidence available across the literature, we have utilised the NHMRC Evidence Heirarchy, or 'levels of evidence' for Intervention, diagnostic accuracy, prognosis, aetiology or screening intervention respectively. Designations for Interventional research are summarised right. For full explanation of levels of evidence, refer to the following document:

NHMRC additional levels of evidence and grades for recommendations for developers of guidelines STAGE 2 CONSULTATION Early 2008 – end June 2009

Accessed online October 2011 here:

http://www.nhmrc.gov.au/_files_nhmrc/file/guidelines/stage_2_consultation_levels_and_grades.pdf

Table 2 | Levels of Evidence

Level	Intervention
I	A systematic review of Level II studies
II	A randomised controlled trial
III-1	A pseudorandomised controlled trial (i.e. alternate allocation or some other method)
III-2	A comparative study with concurrent controls: • Non -randomised experimental trial • Cohort study • Case control study • Interrupted time series with a control group
III-3	A comparative study without concurrent controls • Historical cohort study • Two or more single arm study • Interrupted time series without a parallel control group
IV	Case series with either post-test or pre-test/ post-test outcomes

Screening for Obesity: Waist measurement, weight, or BMI?

Waist measurement, waist-hip ratio, weight, and BMI have all been used as proxy measures for cardiometabolic risk related to obesity. Waist circumference is currently considered the single most accurate measure for central adiposity, and is predictive of future risk for coronary heart disease. [15]. Waist Hip Ratio may be useful in some settings, but in our experience to not add much clinically.

PRACTICE TIP:

Waist circumference varies by ethnicity:
Europid male ≥ 94cm, female ≥ 80cm
Asian male ≥ 90cm, female ≥ 80cm

While BMI can predict cardiovascular risk, several large prospective cohort studies conducted among different cultural groups demonstrate that for non-obese persons, raised waist circumference (indicative of central abdominal adiposity) is associated with inflammatory mediators, insulin resistance and diabetes, stroke risk, and death [15-17]; and may be a better predictor.

Waist circumference is predictive of cardiovascular risk independent of BMI.

Level II Evidence

Thus if a single tool were to be selected to assess future cardiometabolic risk, waist circumference (even in otherwise thin persons) is the most reliable measure. Management of isolated central abdominal adiposity in the absence of other abnormalities involves diet and exercise programs for weight loss. Flip to the "Resources" section of this manual for more information about local treatment programs.

15. Reis JP, Macera CA et al. (2009). Comparison of overall obesity and body fat distribution in predicting risk of mortality. Obesity 17(6) 1232-9
16. Zhang X, Shu XO et al. (2009). General and abdominal adiposity and risk of stroke in Chinese women. Stroke 40(4) 1098-104.
17. Lapice E, Malone S et al (2009). Abdominal adiposity is associated with elevated C-reactive protein independent of BMI in healthy non obese people. Diabetes Care 32(9): 1734-6

Table 3 | Classification and follow up of blood pressure levels in adults

Diagnostic category*	Systolic (mmHg)	Diastolic (mmHg)	Follow up
Normal	< 120	< 80	**Recheck in 2 years** (or earlier as guided by patient's absolute cardiovascular risk) †
High - normal	120 - 139	80 - 89	**Recheck in 1 year** (or earlier as guided by patient's absolute cardiovascular risk) †
Grade 1 (mild) hypertension	140 - 159	90 - 99	**Confirm within 2 months.** See *When to intervene* (page12)
Grade 2 (moderate) hypertension	160 - 179	100 - 109	**Reassess or refer within 1 month.** See *When to intervene* (page 12)
Grade 3 (severe) hypertension	≥ 180	≥ 110	**Reassess or refer within 1-7 days as necessary.** See *When to Intervene* (page 12)
Isolated systolic hypertension	≥ 140	> 90	**As for category corresponding to systolic BP**
Isolated systolic hypertension with widened pulse pressure	≥ 160		**As for grade 3 hypertension** ‡

* When a patient's systolic and diastolic BP levels fall into different categories, the higher diagnostic category and recommended action/s apply.
† See Assessing absolute cardiovascular risk (page 14)
‡ In middle-aged and elderly patients with cardiovascular risk factors or associated clinical conditions, isolated systolic hypertension with large pulse pressure indicates high absolute risk for cardiovascular disease

18.Extract from National Heart Foundation of Australia (National Blood Pressure and Vascular Disease Advisory Committee). Guide to management of hypertension 2008. Quick reference guide for health professionals. Updated December 2010. Accessed online 14th July 2011 Weblink: http://www.heartfoundation.org.au/SiteCollectionDocuments/HypertensionGuidelines2008to2010Update.pdf

Blood Pressure

Awareness and knowledge of key parameters can assist in timely referral, treatment, and reduction of cardiovascular risk. The Heart Foundation "Guide to Management of Hypertension 2008", and "Quick reference guide for health professionals (updated 2010)" provide detailed evidence based information about best practice management of raised blood pressure [19].

PRACTICE TIP:

For those with diabetes, coronary heart disease, chronic kidney disease or prior stroke/TIA, blood pressure should be kept below 130/80. Otherwise, 139/89 is considered the upper limit of normal. Where raised blood pressure is detected, referral to a GP for multiple measures and assessment of cardiovascular risks is recommended.
Table 3 (previous page) demonstrates the urgency with which the National Heart Foundation suggest medical advice should be sought according to the blood pressure levels.

All patients with raised blood pressure should be advised about the importance of lifestyle modification, including smoking cessation, salt reduction, weight loss and minimising alcohol intake.

Where medical management is indicated, antihypertensive treatment reduces the risk of adverse cardiovascular outcomes as compared to placebo [20].
Level I evidence

Those patients who are adherent to antihypertensive treatment are 38% less likely to have an adverse cardiovascular event than those who are non adherent [21]
Level III-2 evidence

19. National Heart Foundation of Australia (National Blood Pressure and Vascular Disease Advisory Committee). Guide to management of hypertension 2008. Quick reference guide for health professionals. Updated December 2010. Accessed
20. Staessen JA, Wang J, Lutgarde T (2001). Cardiovascular protection and blood pressure reduction: a meta-analysis. The Lancet, 358(9290): 1305-1315.
21. Mazzaglia G, Ambrosioni E, Alacqua M, et al. Adherence to antihypertensive medications and cardiovascular morbidity among newly diagnosed hypertensive patients. Circulation 2009; 120:1598-1605.

Random Blood Glucose

Random blood glucose was historically used as a screening test for diabetes, however has a low yield compared to a fasting test. An evaluation of the utility of random blood glucose testing demonstrated that if tested close to the time of eating (<1hour) the test had a higher sensitivity and specificity than if it were conducted a long time after eating, when false negatives were common [22].

A useful screening test to supplement the fasting blood glucose is a fingerprick blood glucose test two hours post prandial (after eating): Two hours after consuming a glucose load of 75-100mg (ideally as part of a glucose tolerance test); random BSL above 11.1 may indicate diabetes, and above 7.8 impaired glucose tolerance.

PRACTICE TIP:

Don't rely on random glucose as an isolated blood glucose screen, as false negatives are common. Best practice is a venous fasting blood glucose in combination with an oral glucose tolerance test where a true fasting BSL > 5.6, or if this is not available, a random blood glucose capillary test two hours after eating.

If random Blood glucose is > 6.1 consider repeat testing or oral glucose tolerance test for diagnostic clarification [23].

22. Engelgau MM, Thompson TJ et al (1995). Screening for diabetes mellitus in adults. The utility of random capillary blood glucose measurements. Diabetes Care 32, 641-643
23. Sommanavar S, Ganesan A et al. (2009). Random capillary blood glucose cut points for diabetes and pre-diabetes derived from community-based opportunistic screening in India. Diabetes Care 32(4) 641-643.

Fasting Blood Glucose

The Consensus Statement"Diabetes, psychotic disorders & antipsychotic therapy" [12] recommends that blood glucose should be screened in all patients with psychosis a minimum of twice yearly, and also monthly for six months after changing medication [12]. If a fasting blood glucose is ≥5.6 on two repeat tests, an oral glucose tolerance test is recommended [24,7]. This test involves drinking a concentrated sugary drink and checking blood sugar pre-drink, at one and two hours post ingestion. The result will help to differentiated between diabetes, insulin resistance (or pre-diabetes) and a normal result. A diagnosis of diabetes enables a patient to be linked in to diabetic services, with access to greater medicare rebates for treatment (see page 55). Diagnosis also allows for prevention and early management of complications, which occur in 50% of people at diagnosis (See figure 4 on page 20)

In the future, HBA1C may be an additional diagnostic tool, however it is not approved currently.

PRACTICE TIP:

Full metabolic review recommended where fasting glucose ≥ 5.6. Note that fasting blood glucose may not always be fasting - even a cup of coffee with a small amount of milk will alter the result.

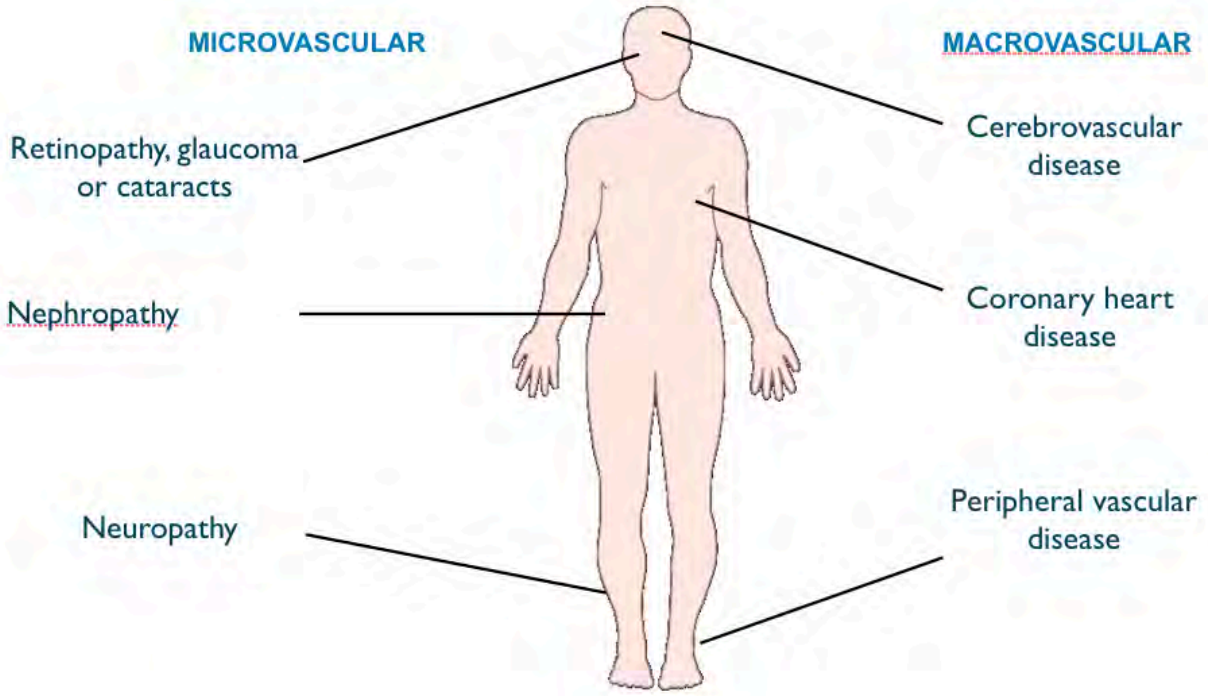
A raised fasting blood glucose with a negative test indicates insulin resistance, or 'pre-diabetes', and advice can then be given on lifestyle changes to slow the development of diabetes [24,7].

If blood glucose is abnormal, long term intervention targeting multiple risk factors has been shown to halve the risk of a cardiovascular event occurring. [25]

Level II evidence

12. Alberti KG, Zimmet P, Shaw J. The metabolic syndrome--a new worldwide definition. Lancet. 2005;366: 1059-1062.
24. Therapeutic Guidelines: Endocrinology. (2009). Accessed online 15/1/10: **http://www.tg.org.au/index.php?sectionid=44**
7. Lambert T, Chapman L (2004). Consensus statement "Diabetes, psychotic disorders and Antipsychotic Therapy". Accessed online 15/1/10: **http://www.open4media.com/ccCHiP/Diabetes_Consensus.html**
25. Steinberg D, Glass CK, Witztum JL (2008) Evidence Mandating Earlier and More Aggressive Treatment of Hypercholesterolemia Circulation 118: 672-677.

Figure 4 | 50% of type 2 diabetes patients have complications at the time of diagnosis



26.Ref Intensive blood-glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complications in patients with type 2 diabetes (UKPDS 33). UK Prospective Diabetes Study (UKPDS) Group. Lancet. 1998;352:837-853.

Cholesterol Profile

Based on International Diabetes Federation (IDF) definition for metabolic syndrome [12], ccCHiP recommends metabolic review where TG≥1.7 or HDL<1.03 (male) or HDL <1.29 (female). The Pharmaceutical Benefits Scheme (PBS) will fund lipid lowering treatment for some high risk groups with total cholesterol ≥5.6 or LDL≥2.5 (See page 44) [11]

PRACTICE TIP:

Lipid profile should be measured every six months in patients with psychotic disorders.[12]
Metabolic risk is related to less obvious abnormalities, including triglyceride >1.7 HDL <1.03 (male) or 1.29 (female).

Patients with any abnormalities in their cholesterol profile (the full profile should be checked) should receive a full metabolic history and examination, and advice on exercise, weight reduction and dietary modifications.[7]

If cholesterol profile is abnormal, treatment eg. with a statin has been shown to reduce the risk of a cardiovascular event by up to 30%. So medical management only partially offsets the risk, and early, aggressive management targeting multiple factors is warranted.[25] Level II evidence

12. Alberti et al. The metabolic syndrome--a new worldwide definition. Lancet (2005) vol. 366 (9491) pp. 1059-62.
11. Therapeutic Guidelines: Endocrinology. (2009). Accessed online 15/1/10: http://www.tg.org.au/index.php?sectionid=44
7. Lambert T, Chapman L (2004). Consensus statement "Diabetes, psychotic disorders and Antipsychotic Therapy". Accessed online 15/1/10: http://www.open4media.com/ccCHiP/Diabetes_Consensus.html
25. Steinberg D, Glass CK, Witztum JL (2008) Evidence Mandating Earlier and More Aggressive Treatment of Hypercholesterolemia. Circulation 118: 672-677.

Vitamin D Levels

Vitamin D deficiency is common in the Australian population, testing is recommended for all Australians for optimal bone health, and deficiencies can be corrected with oral supplementation.[27] there is some evidence that low Vitamin D is also associated with diabetes, and is an independent risk factor for cardiovascular disease.[28] Maternal gestational Vitamin D deficiency has also been implicated in the aetiology of some mental illnesses, and particular care should be taken to ensure adequate Vit D levels in women of child bearing age.[29]

We advise checking Vitamin D levels because a large proportion of the Australian population have been found to have low Vitamin D, which can impact on mood and may be a risk factor for diabetes and cardiovascular disease.[27,28]

25-OH-Vit D titre	Level of deficiency
0-12.5 nmol/L	severe
12.5 - 25 nmol/L	moderate
25 - 50 nmol/L	mild
50+ nmol/L	sufficient

PRACTICE TIP:

ccCHiP recommends that cases of Vitamin D insufficiency should be treated as they are detected with oral supplementation.

27.Working Group of the Australian and New Zealand Bone and Mineral Society, Endocrine Society of Australia and Osteoporosis Australia. (2005). Vitamin D and adult bone health in Australia and New Zealand: a position statement. MJA. 182(6): 281-285

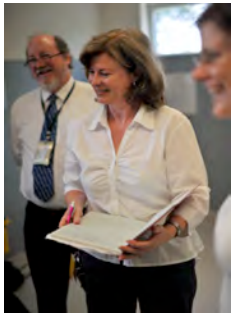
28.Mathieu C, Gysemans C, Giulietti A, Bouillon R. (2005) Vitamin D and diabetes. Diabetologia. 48(7):1247-57

29.McGrath J. Hypothesis: is low prenatal vitamin D a risk-modifying factor for schizophrenia? Schizophr Res. Dec 21 1999;40(3):173-177

Clinic Routine: Taking a metabolic history

For an assessment of the patient's metabolic risk, patient factors, family history, medications and lifestyle all need to be considered. It would be appropriate for all members of the team to learn how to elicit the relevant history and perform the physical examination, including essential parameters as follows. A quiet, comfortable waiting area is important so that patients are able to "settle" prior to being seen, particularly important when measuring the blood pressure. Students attending clinical placements are taught to conduct the history and examination under supervision. The essential and minimal information required for each patient can be found in the ccCHiP form. (See page 71).

Introductions/developing rapport: One staff member should introduce him or herself to the patient and explain the following points:



1. The patient will be having a physical health check: necessary for all patients.
2. It should be explained that patients who are in hospital with a mental health condition are at a higher risk than the general population for health problems such as heart disease and diabetes.
3. The purpose of this visit is to detect and treat any problem early: such as high blood pressure or high cholesterol.

Demographics: A demographic history should be obtained. Details include: Age, sex, marital status living arrangements, social, employment status and level of education. What diagnosis the patient has been told they have is also important.

Asking about education and prior work history helps with consideration of their longitudinal history as well as baseline functioning.

Listening and briefly acknowledging these aspects of history can let the patient know you are considering the bigger picture of who they are, and will also help with providing feedback at an appropriate level, and adjusting jargon depending on their level of medical knowledge/ training/ general educational level.

Personal medical history/family history: A personal history of hyperlipidaemia, hypertension, diabetes or obesity are relevant, as well as past history of gestational diabetes or polycystic ovarian syndrome. The ethnicity of the patient and of their parents can indicate potential genetic risk. People from Middle Eastern, South East Asian, Indian Subcontinent, African American or Aboriginal Australian ethnicity are at higher risk of metabolic disorders. A history of smoking and alcohol consumption should also be obtained. A family history of obesity, cardiovascular disease, diabetes, hypertension, hyperlipidaemia and mental illness should be obtained.

Medications: A medication history should include any treatment for mental illness as well as physical illness.

Lifestyle/dietary history: Our dietitian takes the dietary part of the history, and then provides simple advice including simple, cheap healthy meal suggestions, and menu planning. This advice is tailored to any metabolic findings such as high cholesterol or diabetes.

Key aspects of dietary history particularly to consider are soft drink and fruit juice intake, take away meal frequency. Further intervention will be most likely be necessary and needs to be organised. The amount of exercise should also be ascertained and advice provided to increase activity. We have the benefit of having an exercise physiologist from the endocrinology and diabetes unit who can review the patient.

Record keeping: It is useful to allocate a staff member to write notes during the interview. In our clinic, one person usually writes in the patient's progress notes, another completes the minimum dataset, and a third person takes the history and examination. Each clinic would need to adapt depending on the number of people attending the clinic.

Clinic Routine: The metabolic examination

General: Look out for general physical signs of nutrition (skin, hair state), hydration (sunken eyes, skin turgor), foot care (possible ulcers, pressure sores, peripheral pulses, and obvious evidence of possible infections). During the history taking ask the person whether they have been physically well otherwise. A general question such as this will occasionally detect abnormalities such as incidental chest pain, sleep disturbance, or other important physical concern which can be fed back to the treating team for investigation.

PRACTICE TIP:

Every mental health practitioner should learn the use of a tape measure, glucometer and manual blood pressure cuff.

Measuring height: Ensure the person standing straight and looking straight ahead.

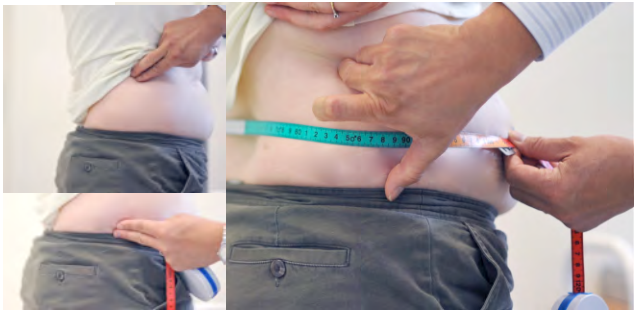
Measuring weight: Check that your scales and height measure are accurate. Any digital scales can be used provided that these are calibrated. The same scales should be used to re-weigh the patient at follow-up. BMI is calculated using the following formula:

BMI = (weight kg/ height m²)

Measure blood pressure: Measure after a period of rest. It is essential that the size of the blood pressure cuff should be appropriate for the patient's size.

Waist circumference: It is important to lift the shirt, as layers of clothing have variable thicknesses, and the landmarks will not be obvious. It is useful to remind the patient the reason we measure waist circumference is because abdominal fat is a predictor of metabolic risk. When recording, make sure the person is not tensing abdominal muscles, and is standing relaxed. Hold the tape measure loosely but closely around the abdomen.

Anatomical landmarks: The first anatomical landmark is the lowest rib. The second landmark is the anterior superior iliac spine. Measure at the midpoint.



Blood glucose (Capillary, finger prick): Explain the purpose of the test beforehand. Also check when the patient last ate or drank – including drinks. Wipe the patient's finger with a swab/ cotton ball or plain tissue moistened with water. Alcohol wipes may interfere with the reading, as may the honey left over on the patient's fingers from breakfast. Blood glucose testing strips will oxidise when exposed to air, resulting in a false reading, so containers should be shut following removal of each strip. It is also important to check the serial number on the strip container and compare this with the strip number shown on the blood glucose monitor. After pricking the finger using a single use lancet (these can be obtained from Diabetes Australia NSW), dispose of the sharp in a sharps bin. Explain the result to the patient.

Detection

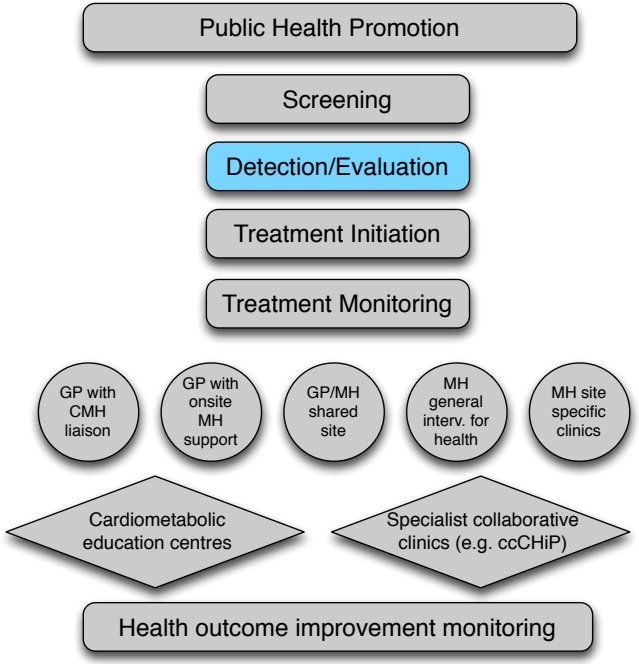


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Table 1 | Defining MetS by the IDF

Central obesity (WC)*		
Ethnicity	Male	Female
Europid	≥94	≥80
S/SE Asian; Chinese; ethnic Sth Americans	≥90	≥80
Japanese	≥85	≥90

Plus any 2 of	
TG	≥1.7 mmol/L#
HDL	<1.03 (M); < 1.29 (F)#
BP	≥130 systolic, or ≥85 diastolic mm Hg †
BSL	≥5.6 mmol/L †

* if BMI≥30, waist measure not needed; # or previous treatment for this condition; † or has been previously diagnosed with condition

12. Extract from Alberti KG, Zimmet P, Shaw J. The metabolic syndrome--a new worldwide definition. Lancet. 2005;366: 1059-1062.

Screening ≠ Detection

Our experience (and the literature) supports the view that when blood tests and imaging are ordered, the clinician does not always a) look up the results and/or b) communicate the results to the patient. [30]. A system for reviewing all routine tests is essential. This can be approached in a number of ways, but to be successful, review needs to be integrated into everyday clinical care.

PRACTICE TIP:
There are logical times when results can easily be scanned during routine care:

Inpatient Setting:
- On review of admission bloods
- At case review
- When completing discharge summary

Outpatient Setting:
- Alongside other screens - eg Clozapine
- At the time of consultant review
- At Case Review
- At any point of change in care (eg new case manager, change of medical officer)

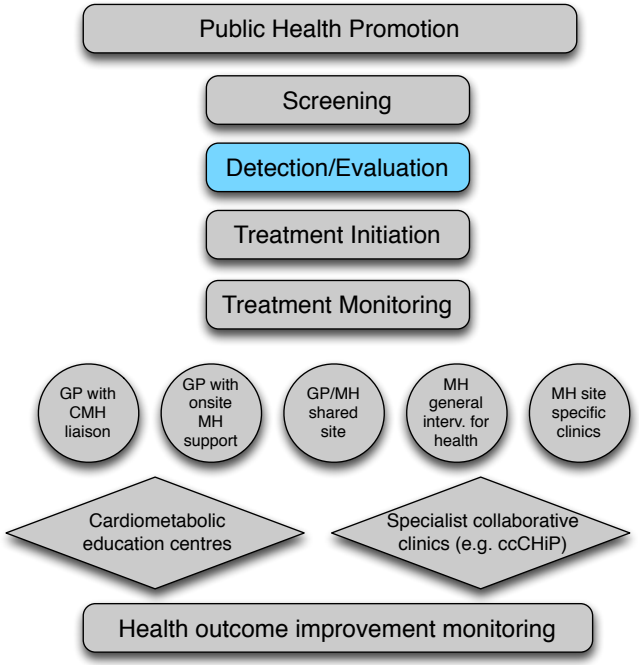
Current data management systems both in the hospital community setting have been inadequate at present to enable us to flag high risk patients. Ideally, data management would be integrated. While waiting for these developments, we have found keeping a small excel file of at risk patients on a secure hospital computer enables us to monitor health parameters over time, thus detecting progression to metabolic disorder.

Detecting Metabolic Syndrome:
Current Australian recommendations are to use the International Diabetes Federation criterion to define metabolic syndrome. (see Table 1, page 27)

Detecting absolute and relative risks of developing CVD:
Framingham risks of developing cardiovascular disease can also be calculated using tools developed for the purpose. ccCHiP have developed a software application for calculating Framingham risks that can be provided on request.

30.1. Casalino et al. (2009). Frequency of failure to inform patients of clinically significant outpatient test results. Intern Med 169(12): 1123-29

Formulation



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Formulation

Formulation involves the bringing together of the data with the patient to develop a plan of action. Accurate formulation requires an awareness of multiple factors:

- Health variables – physical and historical
- Psychiatric diagnosis and treatment
- Lifestyle and behaviour (activity, diet)
- Adherence and risks of treatment

When commencing a new clinical service, clinicians level of knowledge and experience regarding metabolic disorders and their treatment will vary widely. In our multidisciplinary, integrated clinic, we have developed a series of algorithmic tools to assist with formulation. (See pages 31-34)
It is important not to oversimplify algorithms for formulation. There are times when patient and system factors will make standard best care very difficult to achieve.

Case example:
Sue is a 45 yo lady of Asian ethnicity with a diagnosis of schizoaffective disorder (duration of illness> 20 years) and insulin dependent Type II Diabetes Mellitis. She lives alone, divorced, DSP, case managed at community mental health service locally. She has a GP. When unwell, she self injects salt water and drinks salt water due to delusions about purification.

- HBA1C 14.7%, random BSL 22.1
- Chol 7.2, TG 1.5
- BP 140/105, BMI 24.5

Oral hypoglycaemics have been unsuccessful at lowering sugars, however adherence is a major issue. Her 10 year risk of developing CVD is 27% (average 10 year risk for her age and sex is 8%).

Carefully co-ordinated treatment with multiple health professionals involved is essential. While insulin is necessary for adequate blood glucose control, previous injecting behaviour makes this difficult. Without increased support for her with medication administration, her outcome is likely to be poor.

This case highlights the type of patient often seen in our clinic. Without considering all the elements involved, a realistic plan of action cannot be formulated.

Algorithms for Clinical Pathways

Formulating clinical pathways of care for patients with mental illness and metabolic disorders is complex. Several factors must be assessed and taken into account:

- Adherence pattern (see Page 46)
- Living arrangements
- Current and required level of support from others including carers, family and friends
- Existing health care arrangements
- Type of metabolic health problem

Due to the interaction of these factors, a one-size-fits -all approach to clinical care is unlikely to be effective. Considering all patients to be at risk and taking on the comprehensive metabolic management of all mental health patients is beyond the scope of current community and hospital mental health services.

PRACTICE TIP:

When formulating care, decide...

1. what is the best model of shared care?
2. who is best placed to coordinate care?

In this section, we outline methods to streamline patients into the appropriate pathways for care, with varying levels of responsibility by mental health services.

We identify two algorithms "Who" and "What & When?" (See pages 32-24) which help in delineating the degree of responsibility mental health services carry for metabolic monitoring. This is determined by a combination of living arrangements, existing health care provisions, and pattern of adherence.

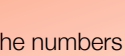
The numbers in the green circles eg.  on the algorithm pages refer to further detail about management options delineated in the 'management' section of this manual. .

Figure 5 | Best Practice Flowchart

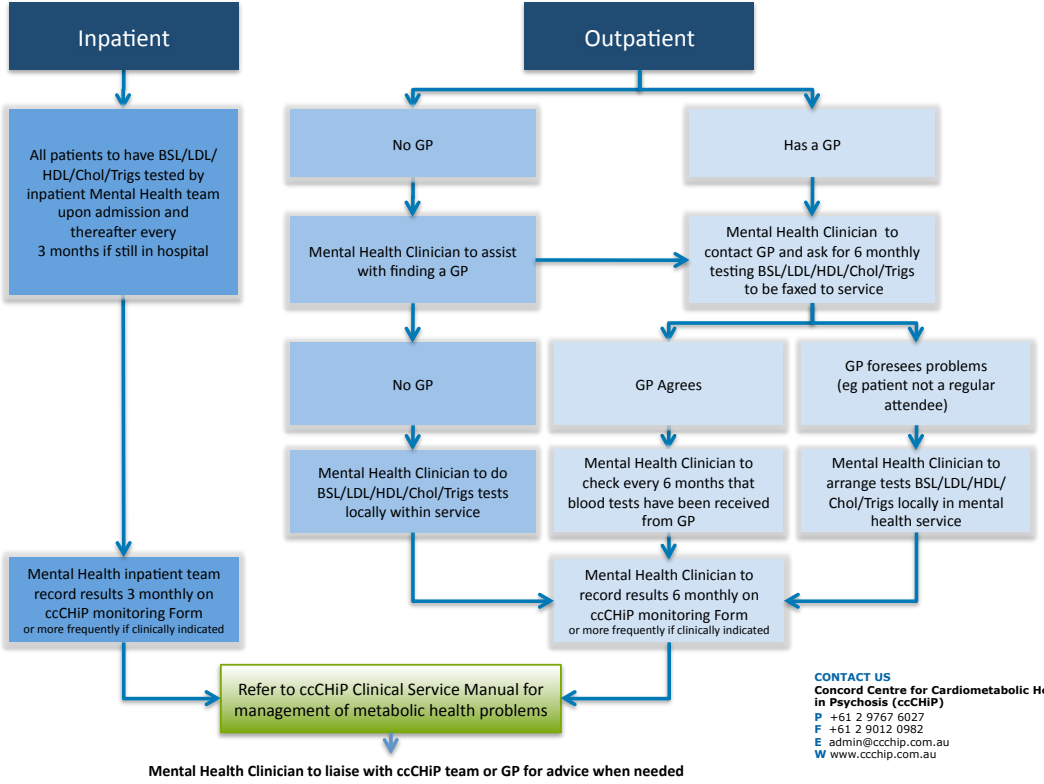


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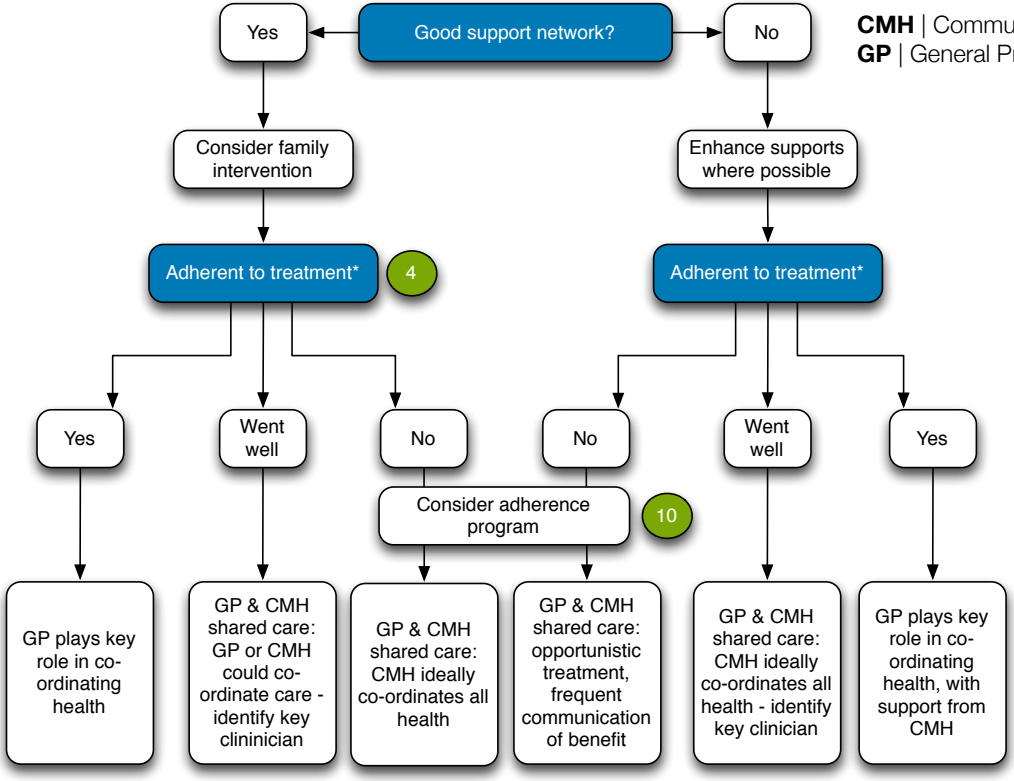
Figure 6 | Metabolic Management - Algorithm 1: Who?



CMH | Community Mental Health Team
GP | General Practitioner

*Note: defining adherence is discussed on page 46

Figure 7 | Metabolic Management - Algorithm 2: What & When?

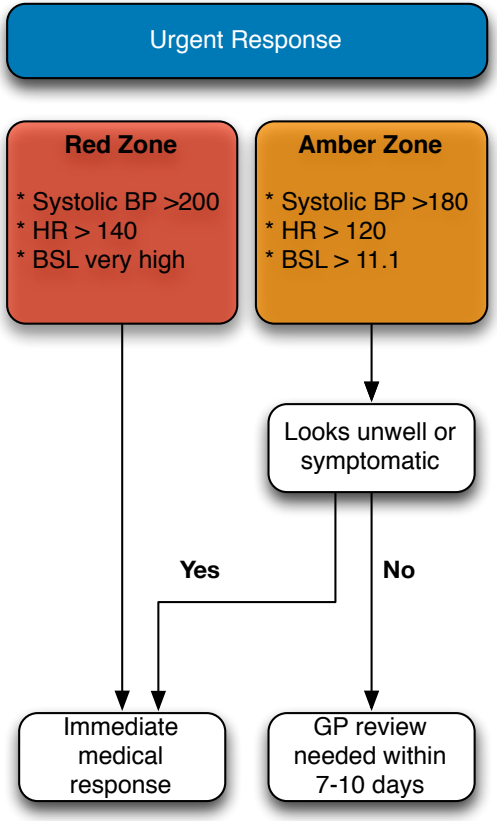


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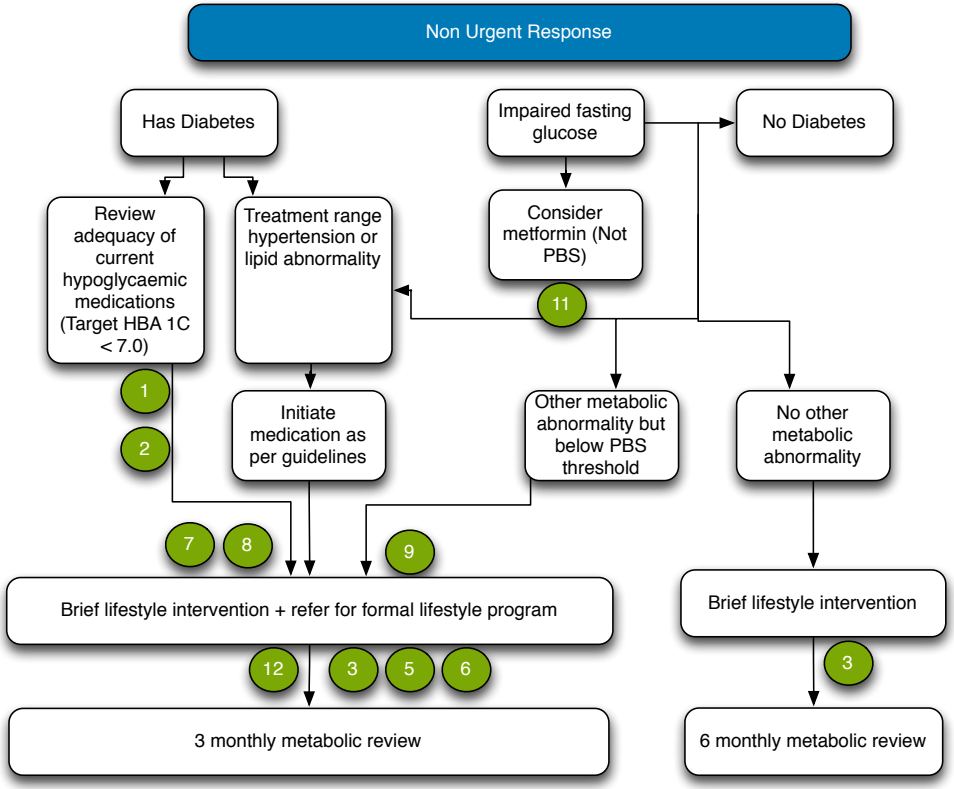
Figure 8 | Metabolic Management - Algorithm 2: What & When?



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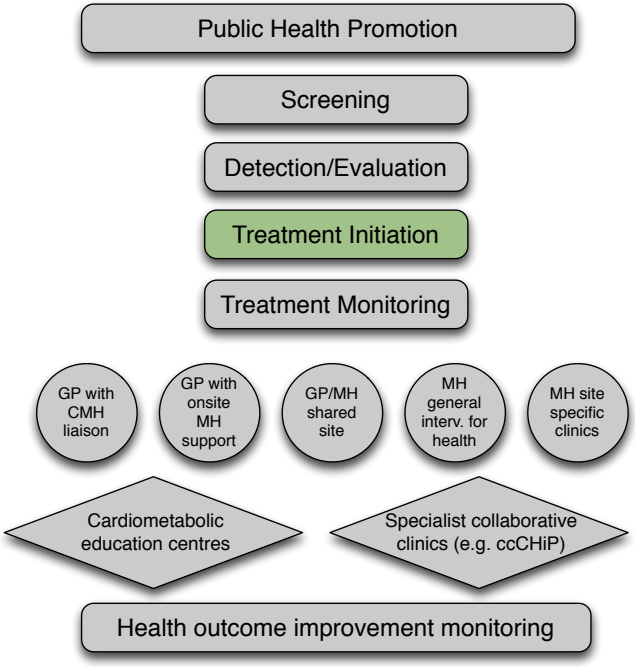
Initiating Treatment



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Initiating Treatment

It is useful to develop a palate of interventional tools that can be used in tailoring initial management for patients receiving metabolic screening. These metabolic interventions should consider the complex circumstances of each particular patient - in particular keeping in mind the “who” algorithm - and delineating a key clinician responsible for monitoring outcome of treatments initiated. These points will be outlined in detail through this section.

For patients with a diagnosis of diabetes consider:

1. The “who” should include a diabetes clinic or regular contact with a GP. Foot, eye and kidney checks need to be arranged regularly.
2. Review adequacy of current hypoglyceamic agents including adherence assessment.

The following evidence based interventions should be considered for all mental health patients:

3. Individualised brief intervention on diet and activity and brief smoking cessation intervention
4. Family intervention
5. Specific diet and exercise program (eg. the ccCHiP manualised program discussed on page 41)
6. Specific smoking cessation program

Those with other specific abnormalities may benefit from the following:

7. Antihypertensive agents
8. Cholesterol lowering agents
9. In some cases Vitamin D supplementation

Initiating Treatment

Those patients with known poor adherence to treatment programs may benefit from:

10. adherence treatments

For patients who are overweight/obese/ have increased weight circumference, there is evidence that metformin may slow the progress of psychotropic related weight gain

11. Consider Metformin (Not PBS subsidised)

Change of psychotropics is rarely recommended, as stabilisation of psychiatric symptoms with appropriate doses of medication is pivotal to engagement with further treatment.

12. Consider switching to a less orexigenic medication.

Specialist Referral

1

Specialist referral is recommended in the following situations:

1. Diabetes with ketoacidosis or presence of peripheral complications. (see page 20)
2. Poorly controlled diabetes indicated by HBA1C > 8.0.
3. For assistance with management of poorly controlled hypertension.
4. Alarmingly raised lipids - eg very high triglycerides with pancreatitis.
5. Renal disease.
6. History indicating possible cardiovascular disease
   a. chest pain
   b. palpitations
   c. unexplained fainting or falls
   d. dizziness, chest or leg pain on exertion
   e. assistance in management of metabolic health where contraindications to simple agents exist - eg. statins or ACE inhibitors

PRACTICE TIP:

- For complex cases it may be of benefit to discuss with the GP and ring the specialist to discuss the referral, particularly if there are likely to be difficulties for the patient waiting and/or comprehending the need for specialist intervention.
- A case manager or carer attending the appointment is likely to be helpful.
- Write a brief letter to the specialist detailing mental health diagnosis, current care providers, and question for referral.

Hypoglycaemic agents

2 11

The psychiatrist requires support to manage diabetes as the prescribing of glycaemic agents requires specific expertise. If blood glucose is abnormal, long term intervention targeting multiple risk factors has been shown to halve the risk of a cardiovascular event occurring. [10]

There is evidence for the use of metformin in prevention of weight gain and diabetes among those with serious mental illness who are taking psychotropics, however, treatment with metformin is not PBS funded except for diabetes. Level of evidence [45,46.]

PRACTICE TIP:
Where diabetes is diagnosed in the psychiatric setting, it is judicious to commence 500mg metformin XR and increase to metformin 1g with dinner if tolerated.

Ongoing care of diabetes needs to involve regular review by GP/diabetes clinic.

Contraindications: severe renal impairment, sepsis or ischaemia.

Serious adverse effects: Lactic acidosis (uncommon). Take particular care in dehydration, the elderly and those with renal impairment.

10. Gaede P, Vedel P, Larsen N et al. (2003). Multifactorial intervention and cardiovascular disease in patients with type 2 diabetes. New England Journal of Medicine 348: 383-393.
31. Klein DJ, Cottingham EM, Sorter M, Barton BA, Morrison JA. A randomized, double-blind,placebo-controlled trial of metformin treatment of weight gain associated with initiation of atypical antipsychotic therapy in children and adolescents. Am J Psychiatry. 2006;163:2072-2079.
32. Wu RR, Zhao JP, Guo XF et al. Metformin addition attenuates olanzapine-induced weight gain in drug-naive first-episode schizophrenia patients: a double-blind, placebo-controlled study. Am J Psychiatry. 2008;165:352-358.

Brief Lifestyle Intervention

3

Brief lifestyle intervention has been demonstrated to be effective in reduction of a range of high risk behaviours including smoking [31], alcohol [32] and marijuana use. A tailored brief intervention is even more effective when combined with a motivational interviewing approach [33,34].

1. Take a brief lifestyle history

- Smoking: daily? Prior attempts to quit?
- Exercise: Currently exercise regularly? Is a 'light puff' achieved during exercise indicating an effective level?
- Brief diet history: Soft drink? fried foods? high energy take-away?
- Weight history: Lost or gained? attempting to lose or gain? What were barriers?

2. Advice according to stage of change[35]

Stage	Clinician Action
Precontemplational	Suggest revisit later
Contemplational	Provide options
Action stage or Maintenance Stage	Assess current actions, offer additional options, increase support
Relapse	Supportive listening, troubleshoot difficulties and plan coping strategies

33.Mottillo S, Filion KB, Belisle P et al. Behavioural interventions for smoking cessation: a meta-analysis of randomized controlled trials. Eur Heart J. 2009;30:718-730.
34.Bray JW, Cowell AJ, Hinde JM. A systematic review and meta-analysis of health care utilization outcomes in alcohol screening and brief intervention trials. Med Care. 2011;49:287-294.
35.Sim MG, Wain T, Khong E. Influencing behaviour change in general practice - Part 1 - brief intervention and motivational interviewing. Aust Fam Physician. 2009;38:885-888.
36.Brown,Ä¶ S. A randomized controlled trial of a brief health promotion intervention in a population with serious mental illness. Journal of Mental Health. 2006
37.Prochaska, JO; Velicer, WF. The transtheoretical model of health behavior change. Am J Health Promot 1997 Sep–Oct;12(1):38–48. Accessed 2009 Mar 18

Family Intervention

4

There is robust evidence for family intervention in the prevention and management of childhood obesity, of achieving better outcomes in eating disorders, and in improving general mental health management [36]. In mental illness, specific trials investigating the impact of involving family members in lifestyle programs have not been conducted. Extrapolating from the evidence, engaging family members and carers in lifestyle treatments and medical management for patients with mental illness is likely to be of great benefit.

Benefits of involving family:

- accountability and support
- can assist with practical concerns , and
- enables an opportunity to health gains to be obtained as a family by making lifestyle changes together.

Suggested family interventions

1. Arrange a combined consultation with the consumer and a supportive family member:
   - explain that weight talk can be very demoralising and can lead to disordered eating behaviours and guilt;
   - focus on simple, positive, practical changes;
   - focus on diet and exercise for enjoyment and health benefits, not for weight loss; and
   - draw upon available resources such as healthy eating guidelines (free consumer booklets available for interested clinicians).
2. Refer the consumer to a dietitian and suggest they take their family member along, particularly if someone else in the home is the main person preparing meals.
3. Refer the consumer to a qualified exercise physiologist to develop an exercise plan. Encourage them to involve family members in their exercise program.

PRACTICE TIP:
Working with families is an essential component of both mental and physical aspects of care

38.Chesla CA. Do family interventions improve health? J Fam Nurs. 2010;16:355-377.

Specific Lifestyle Program

5

Lifestyle programs have been demonstrated to be effective among patients with mental illness for:

- Managing weight gain [37]
- Improving negative symptoms & mood [38]
- Increased quality of life [39, 40]
- Improved blood glucose and lipid profile[41]
- Brain changes: increased hippocampal volume [42]

Most programs reported to date have been of a duration of 3-6 months, and follow up rarely extends beyond 12 months. Results indicate a sustained approach is likely to be of greater benefit. Longer term, sustained programs are likely to have effects across all the above domains, as well as impacting upon adherence, personal self efficacy, community engagement and other functional domains.

The ccCHiP lifestyle manuals can guide you through designing an exercise program, or evaluating the effectiveness of an existing one. These are freely available on contacting our team.

39.Alvarez-Jimenez M, Hetrick SE, Gonzalez-Blanch C, Gleeson JF, McGorry PD. Non-pharmacological management of antipsychotic-induced weight gain: systematic review and meta-analysis of randomised controlled trials. Br J Psychiatry. 2008;193:101-107.
40.Faulkner G, Biddle S. Exercise as an adjunct treatment for schizophrenia: A review of the literature. Journal of Mental Health. 1999
41.Acil AA, Dogan, S, Dogan O. The effects of physical exercises to mental state and quality of life in patients with schizophrenia. Journal of Psychiatric and Mental Health Nursing. 2008
42.Poulin MJ, Chaput JP, Simard V et al. Management of antipsychotic-induced weight gain: prospective naturalistic study of the effectiveness of a supervised exercise programme. Aust N Z J Psychiatry. 2007;41:980-989.
43.Wu MK, Wang CK, Bai YM, Huang CY, Lee SD. Outcomes of obese, clozapine-treated inpatients with schizophrenia placed on a six-month diet and physical activity program. Psychiatr Serv. 2007;58:544-550.
44.Pajonk FG, Wobrock T, Gruber O et al. Hippocampal plasticity in response to exercise in schizophrenia. Arch Gen Psychiatry. 2010;67:133-143.

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Specific Smoking Cessation Program

6

Meta-analysis of smoking cessation programmes demonstrates that treatments can be effective for patients with mental illness.

The same treatments that work for the general population can work for those with mental illness [43].

Multi-clinician involvement including medical input is highly advisable as not only is it likely to improve success, but allows for monitoring of p450 system related pharmacological interactions [43, 44].

PRACTICE TIP:
The evidence suggests that combination treatments (such as two different types of nicotine replacement: patch & gum) along with mental health monitoring are best practice [43, 44].

45.Banham L, Gilbody S. Smoking cessation in severe mental illness: what works? Addiction. 2010;105:1176-1189.
46.Stapleton JA. Commentary on Banham & Gilbody (2010): The scandal of smoking and mental illness. Addiction. 2010;105:1190-1191.

Blood pressure lowering agents

7

Where medical management is indicated, anti-hypertensive treatment reduces the risk of adverse cardiovascular outcomes as compared to placebo[20]. Those patients who are adherent to antihypertensive treatment are 38% less likely to have an adverse cardiovascular event than those who are non adherent [21]

Prior to commencing blood pressure lowering medication, blood pressure should be measured on more than one occasion, in more than one setting [18].

In general, blood pressure prescribing requires some expertise and would be ideally managed in the general practice setting. Where a general practice review cannot be obtained, the psychiatrist should discuss the patient with someone with the relevant expertise.

PRACTICE TIP:
Where persistent hypertension is diagnosed in the psychiatric setting, an appropriate first agent such as an ACE-I, B-Blocker or Calcium antagonist etc. can be trialled.

Treatment/ monitoring
The prescription of antihypertensive medications is complex and should be conducted in consultation with general practitioner or clinician with clinical expertise.

20. Staessen JA, Wang J, Lutgarde T (2001). Cardiovascular protection and blood pressure reduction: a meta-analysis. The Lancet, 358(9290): 1305-1315.
21. Mazzaglia G, Ambrosioni E, Alacqua M, et al. Adherence to antihypertensive medications and cardiovascular morbidity among newly diagnosed hypertensive patients. Circulation 2009; 120:1598-1605.
18. National Heart Foundation of Australia (National Blood Pressure and Vascular Disease Advisory Committee). Guide to management of hypertension 2008. Quick reference guide for health professionals. Updated December 2010.

Cholesterol Lowering Agents

8

According to the PBS, the cut off for medical management is total cholesterol≥7.0; however the following lower levels apply to special groups [24]:

- **Diabetes:** Treat total cholesterol > 5.5 or LDL>2.5 or TG's >2
- **Aboriginal:** Treat total cholesterol > 6.5
- **Comorbid Hypertension:** Treat total cholesterol > 6.5
- **Family history coronary heart disease:** Treat total cholesterol > 6.5, LDL>5
- **Family History of Hypercholesterolaemia** (DNA mutation or tendon xanthomas in first degree relative): Treat total cholesterol > 6.5, LDL> 4

PRACTICE TIP:
Where lipid abnormalities are detected in the psychiatric setting and three month diet and exercise fails to control lipids to below PBS treatment range, the introduction of a statin is judicious.Starting with a low dose and increasing after a few weeks improves tolerability.

Required monitoring: With introduction of statin therapy, baseline and ongoing monitoring of CK and LFT's are essential.

Serious adverse effects: Liver dysfunction, rhabdomyolysis.

24. Therapeutic Guidelines: Endocrinology. (2009). Accessed online 15/1/10: http://www.tg.org.au/index.php?sectionid=44

Vitamin D supplementation

9

We advise checking Vitamin D levels because a large proportion of the Australian population have been found to have low Vitamin D, which can impact on mood and may be a risk factor for diabetes and cardiovascular disease [27,28].

Particular groups for whom low Vitamin D is of additional concern:

- Pregnant women - associational studies hypothesise that neurodevelopmental disorders among offspring of mothers with Vitamin D deficiency may increase the risk of schizophrenia [29].
- Those who cover their skin for religious or other reasons.
- Those with dark skin.
- Those at risk for osteoporosis.

Please refer to the Australian Bone Guidelines for further information [27].

PRACTICE TIP:

If levels are < 50 we suggest supplementing with daily oral supplement 1000 IU.

For levels < 30, consider 2000-3000 IU daily.

Pre-treatment: Ensure calcium is normal (low Vit D occasionally due to hyperparathyroidism).
Required monitoring: Repeat level in 1-2 months

27. Working Group of the Australian and New Zealand Bone and Mineral Society, Endocrine Society of Australia and Osteoporosis Australia. (2005). Vitamin D and adult bone health in Australia and New Zealand: a position statement. MJA. 182(6): 281-285
28. Mathieu C, Gysemans C, Giulietti A, Bouillon R. (2005) Vitamin D and diabetes. Diabetologia. 48(7):1247-57
29. McGrath J. Hypothesis: is low prenatal vitamin D a risk-modifying factor for schizophrenia? Schizophr Res. Dec 21 1999;40(3):173-177.

Adherence Treatment

10

It is important to assess adherence patterns for patients with both physical and/or mental health conditions when considering formulation and treatment options. Approximately 1/3 of patients are adherent, 1/3 fluctuate in their adherence, and 1/3 tend to be non adherent to most treatments [30]

Frequent admissions (eg > 2 per 18 months) is strongly correlated with non adherence to treatment. [31]

Another method of estimating adherence is the MPR (medication possession ratio). Those who accessed 80% or more of the prescribed dose are assessed as adherent when using this method. [32]

On the whole prevalence rates of adherence to cardiovascular and metabolic medications are similar to those found we in schizophrenia and bipolar disorder–with a median point prevalence of about 50 to 60% . (See table X for correlates) [33]

PRACTICE TIP:
Adherence management for those with persistent severe mental illness (SMI) involves ensuring access to medication (ideally via long acting injection), in concert with psychosocial intervention. Regular monitoring and follow up is the minimal level of standard care.

ccCHiP's partner organisation at Concord Centre for Mental Health - the Centre for Relapse Prevention in Psychosis (CERP) have published a manual providing guidance to the assessment and management of adherence. This manual is freely available to those interested in developing skills in adherence treatment.

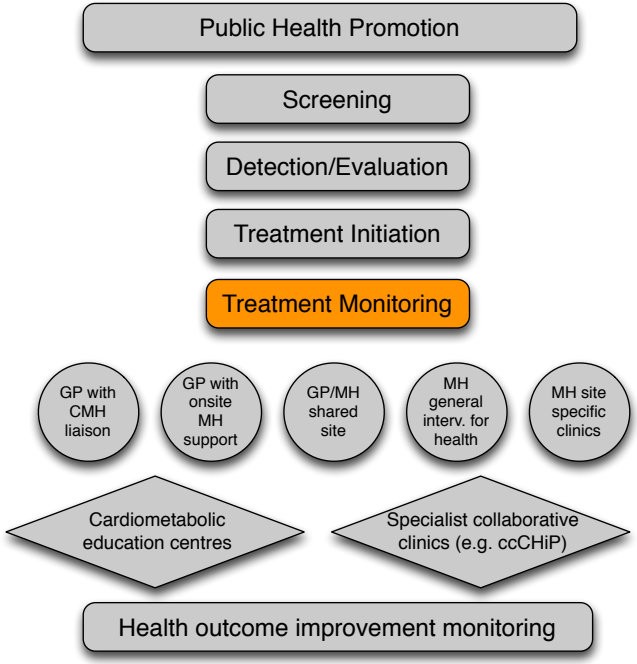
47. Oehl M, Hummer M, Fleischhacker WW 2000. Compliance with antipsychotic treatment. Acta Psychiatrica Scandinavica, Supplementum; 102:83-86.
48.Lambert T. Selecting patients for long-acting novel antipsychotic therapy. Australas Psychiatry. 2006;14:38-42
49 Sikka R, Xia F, Aubert RE. Estimating medication persistency using administrative claims data. Am J Manag Care. 2005;11:449-457
50 Mauskop A, Borden WB. Predictors of statin adherence. Current cardiology reports. 2011;13:553-558.

Table 4 | Predictors of adherence to statins in adults

Factor	Associations with adherence to statins
Age	An inverted 'U' shape has been described with the most adherent group being those in the 50 to 65 age range. For those above 65 adherence rates are low (~40%) but are lowest when they are used in a preventative role.
Gender	Females are less adherent to statins
Ethnicity	Minority groups (mainly African Americans and Hispanics studied). Some evidence exists that concordance between the treating doctor, or the language used in the consultation improves adherence
Income	Income (rather than simply education) is positively correlated with adherence.
Comorbid diabetes	In this population non adherence is predicted by: higher HBA1C, younger page, no history of smoking, No CVD history at baseline, no previous MI.
Side effects	Muscular side-effects in first 3 months of use
Physicians	With the caveat that only 60-70% of guideline identified patients are treated by their doctors, the patient doctor relationship remains a solid predictor of adherence (i.e. treatment or therapeutic alliance).
Costs	Copayment magnitude is inversely related to adherence and/or persistence.

50. Mauskop A, Borden WB. Predictors of statin adherence. Current cardiology reports. 2011;13:553-558.

Monitoring Response



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Treatment Monitoring

Following metabolic health screening and treatment initiation there are multiple facets to monitoring that are important:

- Longitudinal monitoring of metabolic state
- Monitoring of adherence
- Monitoring of response to medication
- Monitoring of complications (feet, eyes, kidneys etc (see Page 20)
- Monitoring interaction of physical disease and psychiatric progress

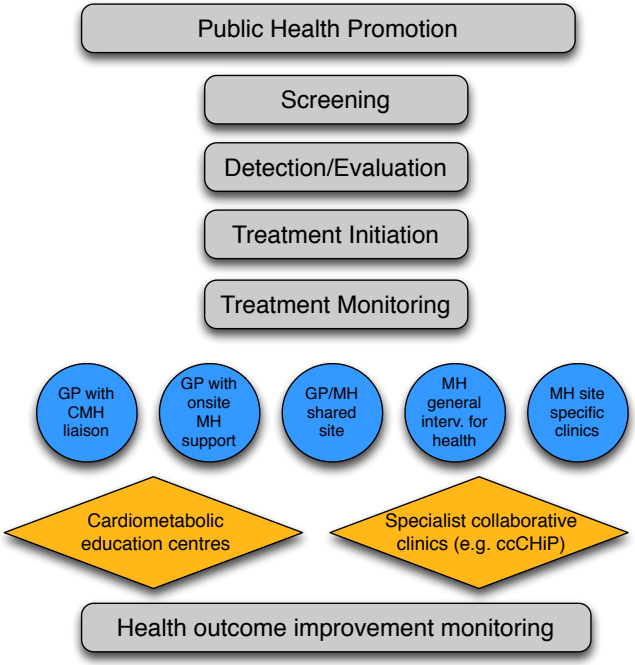
With screening comes a responsibility to consider monitoring, and consider how it can best be implemented. Mental health services will not necessarily take responsibility for the provision of ongoing care for all their patients.

PRACTICE TIP:
A plan for monitoring can be incorporated into the initial management plan which is then communicated to ongoing care providers. Discussions with case manager, GP, and family may also be of benefit in delineating who will be responsible for ongoing monitoring.

There are some patients though for whom ongoing monitoring should continue to be coordinated by their mental health team. These include patients with no GP, or who do not attend their GP reliably, patients in long stay inpatient settings (becoming less common), and patients who are living in the community but are nevertheless very institutionalised (eg in group homes or boarding house locations) and who will benefit from careful ongoing shared care arrangements.

For the reasonably adherent patient who lives with family and reports good rapport with their GP, communication with the GP to arrange regular screening and follow up may be sufficient. On the other hand, the patient with known poor adherence who lives in a group home and only sees his case manager for depot injections because this is required by his CTO conditions. In this case, really, if the mental health team does not take primary responsibility for monitoring and follow up, no one will. Between these two polar examples lies a continuum of different sorts of patients, managed with different degrees of shared care. The appropriate model of monitoring must be tailored accordingly.

Resources



Concord Centre for Cardiometabolic Health in Psychosis

Community Organisation Resources

SPECIFIC EXERCISE OR LIFESTYLE PROGRAMS:

- YMCA "Brightside Program" - a specific lifestyle program for people in prodromal or remission stages of mental illness. Informational brochure linked here: http://www.ymcasydney.org/download?file=ymca-brightside-information-apr-2010.pdf.

- **Local Gymnasium initiatives** - Contact your local gym to see if they offer any programs or discounts for mental health consumers.

- **Obesity Clinic** - Westmead and RPAH hospitals conduct specific clinics for patients with BMI > 35.

GP NETWORKS

- Each GP Network has network meetings (usually monthly) where local GP's meet for education and information sessions.
- Each of these networks has a project development officer who is a useful point of liaison.
- In addition, each network publishes a local newsletter - a useful place to send in a snippet about your service to promote shared care.

SCHIZOPHRENIA FELLOWSHIP: A number of supportive programs for consumers and carers, including the "eat well, move well, stay well program". http://www.sfnsw.org.au/Services/Services-Recovery-Services/default.aspx.

NSW CONSUMER ADVISORY GROUP (CAG): Links to key State and National organisations: http://www.nswcag.org.au/page/key_state__national_mental_health_organisations.html.

ARAFMI NSW: Support and advocacy for families and friends of consumers with mental disorder.

MENTAL HEALTH COORDINATING COUNCIL (MHCC)

The MHCC is the peak body for non-government organisations working for mental health. Programs include:

- Meet your neighbour: http://www.mhcc.org.au/sector-development/meet-your-neighbour.aspx.
- Carer respite project: http://www.mhcc.org.au/projects-and-research/building-capacity-project.aspx.

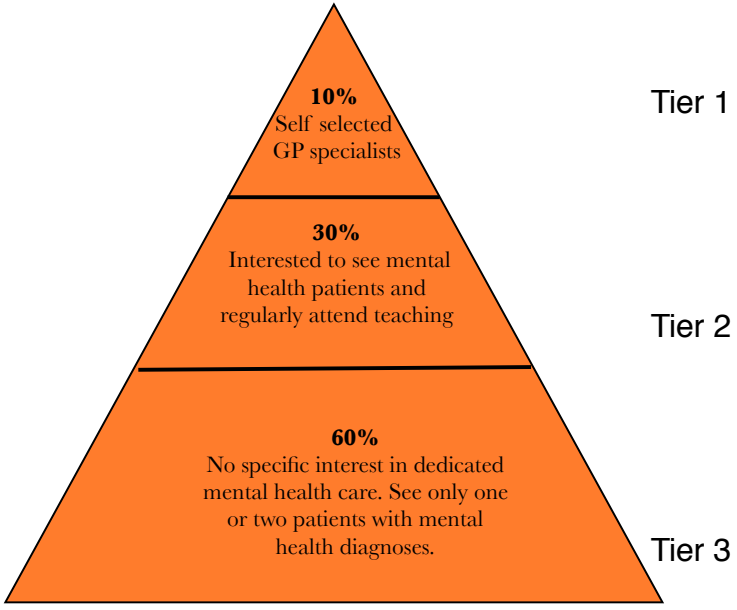
MENTAL HEALTH ASSOCIATION NSW: Provides a Mental Health Support group network service. http://www.mentalhealth.asn.au/.

Resources: General Practitioners

GPs remain the mainstay of primary health care – but not all mental health clients readily access good treatment from GPs. There are different sorts of GPs, but also different sorts of liaison relationships between GPs and mental health care providers. Many models have been developed to assist with shared care, from correspondence and phone call contact, to co-location on the same site. GP liaison should not be seen as uniform. It is possible to delineate three tiers of communication reflecting GP involvement in health of mental health consumers.

Tier 1 GPs are experts in health problems of mental health consumers. They run specific clinics or practices and receive referrals from other GPs and mental health workers. They aid the development of guidelines, and delineation of best practice in this area. We have have identified five local GPs who act as consultants in development of resources.

Those Tier 1 GPs who express an interest in close involvement with mental health patients can be considered a useful resource to give advice about developing systems of liaison.



Resources: General Practitioners

Tier 2 GPs have specialised interest in the mentally ill and have a practice characterised by higher than average case loads of mental health clients. They have extra skills or training in psychiatric intervention. They usually share work with a local mental health team and shared care is promoted.Tier 2 GPs will expect more extensive collaboration and closer liaison with case managers and teams.

Tier 3 GPs are the majority and deal with mental illness as a regular part of routine practice. Minimum standards of communication concerning co-management of patients is important.

This is a working model to facilitate appropriate communication in community care. GPs self select into these models of working. Our current work reflects this model of working collaboratively with GPs.

PRACTICE TIP:

- When developing liaison systems with GPs, it helps to ask the GP to locate themselves on the pyramid.
- Tailor communication with the GP based on their level of ongoing involvement and interest with mental health patients.
- Use expert GPs as consultants to you for developing systems of follow up, referral and communication pathways.
- Consider which model of GP shared care will work best for your most difficult patients.
- Gather a list of Tier 2 and 3 GPs who are happy to accept new referrals, or even who may be interested in co- location arrangements.

Mental Health Referral Pathways

Once GPs have completed a Mental Health Treatment Plan (MHTP) for their patient, they then need to determine under which referral pathway they would like to initiate a referral.

PRACTICE TIP:
The two main pathways for mental health services (focused psychological strategies) targeting mild to moderate presentations are:
1. Better Outcomes project (ATAPS)
2. Better Access initiative (Medicare).

Better Outcomes (ATAPS)
The Access to Allied Psychological Services (ATAPS) project is a Commonwealth funded project, managed by Divisions of General Practice across Australia. The project provides psychological services to patients with a mild to moderate diagnosable mental disorder/ illness who are deemed socially and/or financially disadvantaged.

While each Division of General Practice administers their ATAPS projects in a slightly different manner (i.e. provide direct clinical services vs contract service to local providers) the guidelines for treatment are the same across the board. Each referral under the ATAPS project entitles a patient to receive up to 6 sessions with a suitably qualified allied mental health professional. The patient must then return to their GP following the final session under the referral, so the GP can determine whether a follow on referral is required. Patients can receive up to 12 individual and 12 group therapy sessions per calendar year through the ATAPS project.

Divisions of General Practice across the country receive funding under a tiered system; currently there are 2 tiers to the funding arrangements.

Tier 1 funding allows divisions to target psychological services within their population which supplement those services available through Medicare.

Mental Health Referral Pathways

Tier 2 funding is special purpose funding which supplements Tier 1 funding. Tier 2 funding allows Divisions to provide additional innovative service delivery to particular groups which are not, and cannot, be met through traditional ATAPS service delivery approaches; such as perinatal depression, suicide and self harm prevention, individuals at risk of homelessness etc. Divisions of General Practice are given the flexibility to identify specific target groups within their catchment area to target their Tier 2 funds towards.

Better Access (Medicare)

The Better Access initiative is available to all Australian residents and is monitored through the Medicare system. GPs need to claim the relevant MBS item for completing a MHTP which will then allow their patient to access, and receive rebates for, services provided by appropriately qualified allied mental health professionals, including general practitioners who have completed further training.

PRACTICE TIP:

- Patients can access up to 12 individual and/or 12 group therapy sessions per calendar year.
- Each referral is for up to 6 sessions.
- The patient needs to return to their GP for a review to access the remaining 6 sessions.

In exceptional circumstances patients can receive up to 18 sessions in a calendar year. Exceptional circumstances apply where there has been a significant change in the patient's clinical condition or care circumstances. Patients cannot access both the ATAPS project and the Medicare initiative simultaneously, nor can they utilise both funding streams consecutively to access more than 18 sessions (in exceptional circumstance) in a calendar year.

Medicare Rebate System: Mental Health Items

Medicare rebates are available to patients when any of the following Mental Health Items are claimed by their general practitioner through Medicare Australia:

(Extracted from Medicare Benefits Schedule: http://www9.health.gov.au/mbs/search.cfm)

Preparation of a GP Mental Health Treatment Plan (item 2710 or 2702): Involves the assessment of a patient and preparation of a GP Mental Health Treatment Plan. Once a GP Mental Health Treatment Plan has been completed and claimed on Medicare, a patient is eligible for up to twelve Medicare rebatable allied mental health services per calendar year for services by:

- clinical psychologists providing psychological therapies; or
- appropriately trained GPs or allied mental health professionals providing focussed psychological strategy (FPS) services.

Patients can also be referred for FPS services under Access to Allied Psychological Services (ATAPS), available through Divisions of General Practice. Services provided through ATAPS count towards the patient's entitlement of up to 12 services per calendar year.

Recommended frequency is one plan per patient, with a new plan only being prepared when clinically required (generally not within 12 months of a previous plan), supported by continuing management through consultation and review services.

Review of a GP Mental Health Treatment Plan (item 2712): Enables a review of the patient's progress against the goals in the GP Mental Health Treatment Plan. The recommended frequency for the review service, allowing for variation in patients' needs is as follows:

- an initial review, which should occur between four weeks to six months after the completion of a GP Mental Health Treatment Plan; and

Medicare Rebate System: Mental Health Pathways

- if required, a further review can occur three months after the first review.

In general, most patients should not require more than two reviews in a 12 month period, with ongoing management through the GP Mental Health Treatment Consultation and standard consultation items, as required.

GP Mental Health Treatment Consultation (item 2713): An extended consultation (at least 20 minutes) with a patient where the primary treating problem is related to a mental disorder. May be used for continuing management of a patient with a mental disorder, including for a patient being managed under a GP Mental Health Treatment Plan.

(Extracted from Medicare Benefits Schedule:

http://www9.health.gov.au/mbs/search.cfm.)

Medicare Rebate System: Chronic Conditions

When a diagnosis of a chronic condition is made, there are further Medicare rebates available. The Department of Health and Ageing defines a chronic condition as :

"A chronic medical condition is one that has been (or is likely to be) present for six months or longer. It includes conditions such as asthma, cancer, cardiovascular disease, diabetes, musculoskeletal conditions and stroke."

Mental illness is not currently recognised as a chronic medical illness, so the following rebates only apply once diabetes or cardiovascular disease has been diagnosed.

People with chronic conditions and complex care needs are eligible for five services per patient per calendar year with allied health professionals (items 10950 to 10970).

This can include eligible Aboriginal health worker, diabetes educator, audiologist, exercise physiologist, dietitian, mental health worker, occupational therapist, physiotherapist, podiatrist, chiropractor, osteopath, psychologist and speech pathologist. All that is required to receive this rebate is a referral from a GP and a health care plan. Service provided by eligible mental health worker: Item 10956: Mental health services

GP's can also receive rebates for the following items for patients with a chronic condition:

Preparing a management plan for a patient who has a chronic or terminal medical condition with or without multidisciplinary care needs (Item 721)

Coordinating the preparation of Team Care Arrangements for a patient who has a chronic or terminal medical condition and requires ongoing care from a multidisciplinary team of at least three health or care providers (Item 723)

Reviewing a GP Management Plan (Item 732)

Coordinating a Review of Team Care Arrangements (Item 732)

Contributing to a multidisciplinary care plan being prepared by another health or care provider, or to a review of such a plan (Item 729)

Contributing to a multidisciplinary care plan being prepared for a resident of an aged care facility, or to a review of such a plan (Item 731)

Resources: Diabetic Service Networks

Most hospitals in NSW have an endocrine/ diabetes clinic. It is important to find out what the referral pathways and criterion are for your local diabetes services. Each hospital will be resourced slightly differently, so its good to know what your patients can access. Services could include

- Facilities for regular diabetic screens
- Foot and eye clinics
- Access to allied health for one to one consultation (eg dietitian/exercise physiologist)

PRACTICE TIP:
Fostering links with local diabetic services can be facilitated by:
- clear, concise and regular correspondence that outlines the issues of concern;
- case managers/ carers attending appointments with patients where feasible; and
- regular liaison and opportunities for sharing knowledge.

Diabetes Australia

Diabetes Australia has a section designed for health professionals, linked here:

http://www.diabetesaustralia.com.au/en/For-Health-Professionals/

Australian Diabetes Council

Diabetes NSW is now known as the **Australian Diabetes Council**. Their section for health professionals is linked here:

http://www.australiandiabetescouncil.com/Health-Professionals/Resources-for-HPs.aspx

In addition, they provide links to a range of guidelines:

http://www.australiandiabetescouncil.com/Health-Professionals/Guidelines.aspx

Setting up a Service

Starting a new service within your Local Health Network: an experience based, stepwise account of where to begin, and where to go from there.

Concord Centre for Cardiometabolic Health in Psychosis

Develop a Plan

Prior to commencing a clinical service, a feasibility study is essential. This may mean setting a realistic starting point - for example, piloting a limited service prior to changing practice across the entire service.

In the ccCHiP setting, a decision was made to commence with an inpatient service, where the model of care was developed. Once in place, we extended the clinic to community settings.

In each new setting, we have found the practice milieu to be distinct, and have needed to revisit each of the following important points.

The following areas will need to be considered:

1. Who will manage or co-ordinate the project?
2. What services/ resources exist already and could be built upon or supported?
3. Who are the key stakeholders who will be able to support you in the introduction of a new service e.g. well respected senior clinicians, management, existing teams?
4. How will staffing for the service be arranged and funded?
5. What additional equipment will be required?
6. What will be the procedures for referral, follow up, record keeping and clinical handover?
7. How will communication to internal and external multidisciplinary care providers be managed?
8. How will you evaluate the success of your new service?

Coordinating the Project

While setting up a service may be your idea, think carefully about whether you realistically have the time and resources to co-ordinate the project yourself.

The effectiveness of our own service improved significantly once additional staff positions dedicated to the service were created. Initially, our inpatient service was staffed with the goodwill of three senior staff specialists, who set aside one morning a week to run the pilot clinical service. It was not until the CNC/registrar team were in place that issues like referral procedures, follow up, record keeping and clinical handover could be effectively addressed. Ideally, the person co-ordinating your project will be one of the key team clinicians. It may be that 2-3 clinicians share the role, and each brings some of the ideal qualities to the project co-ordinator role.

Ideal qualities of project co-ordinator:

In our experience it helps to have team members with the following qualities:

- Be well-known and respected by local staff.
- Capacity to remain enthusiastic even in the face of multiple barriers and frustrations.
- Enjoy working both independently and also in teams.
- Be rigorous in record keeping.
- Happy to be flexible in roles and step outside their usual area of expertise.
- Seek help early with clinical or procedural difficulties.
- Be able to 'sell' an idea to people.

Resources/Stakeholders

In expanding our service from hospital to community a number of steps were helpful in promoting links to our 'metabolic clinic', and preventing duplication of services.

It was beneficial to identify:

- existing staff members with a demonstrated interest in physical health screening;
- existing healthy lifestyle programs, including exercise, diet, and smoking cessation programs;
- local GPs with an interest in mental health;
- existing NGO & community programs that patients of the service could access; and
- capacity for access to hospital-based services in the area with an interest in collaboration (e.g. obesity clinics, diabetes and metabolism clinics, staff specialists in cardiology and endocrinology).

The following steps were helpful in identifying available resources:

- Meeting with managers locally;
- Presenting at community team education forums to meet the staff;
- Presenting at the local GP Network Mental Health Forum to inform of the service and promote liaison;
- Researching local resources online as well as discussing with the local rehabilitation team about their experience in the area; and
- Presenting at grand rounds to identify interested staff specialists and discuss access to services.

Staffing the Service

In addition to the three consultants who attend the two hour clinic weekly, other ccCHiP staff include a psychiatry registrar (1.0 FTE) and clinical nurse consultant (CNC) (1.0 FTE), administrative support (0.2 FTE) and dietetic support (0.2 FTE). Other co-opted staff include dietitian, exercise physiologist, and a junior medical officer on a sessional basis. We also have ongoing support from area health dietetics, endocrinology and pathology departments.

A two hour clinic generates a total 26 hours of patient related time per week (spread between 8 clinicians). These staffing levels enable all inpatients at Concord Centre for Mental Health across five wards to be screened on admission, reviewed in clinic if metabolic abnormalities exist, and for a treatment plan to be developed and communicated to care providers.

ccCHiP has developed a streamlined routine of clinical history taking and examination to screen and monitor cardiometabolic disorders A Flow chart of clinic pathways appears on pages 67-70

A video of the clinical process is available online on our website, www.ccchip.com.au. This shows the trans disciplinary team in action with a 'typical' patient.

PRACTICE TIP:
In allocating staff for a potential new clinical service, we suggest that as a minimum, the following staff are necessary:

- Dedicated medical officer (minimum 0.5 FTE)
- Dedicated CNC (minimum 0.5 FTE)
- Liaison support from an endocrinologist
- Dedicated half day per week input from a dietitian (or equivalent liaison support)

Clinical Service: Equipment

Equipment required for clinical review needs to be easily accessible, and regularly checked to ensure that all the components are operational.

Mobile Clinic Kit

- Portable bag or case
- Continuing care hospital and community clinical notes
- Pens
- Script pads
- Pathology order forms
- Blood pressure monitor and three cuff sizes
- Blood glucose monitor
- Spare batteries for blood glucose monitor
- Lancets for pinprick testing
- Blood glucometer strips
- Cotton buds
- Bandaids
- Alcohol handwash

Onsite equipment required at each clinic location

- Scales
- Height measure
- Disposable gloves
- Tissues
- Tap and sink
- Alcohol handwash
- Sharps bin
- Access to patient medical records/ computer-based patient information systems

PRACTICE TIP:
Our mobile clinic kit travels with us in a small bag to different clinical sites. This kit is regularly replenished by the clinic nurse. Further stock of disposable items is stored in the clinic office space.

Establish Clinical Procedures

PRACTICE TIP:
Clinic procedures will inevitably develop and change over time, but it definitely helps to plan a few things in advance.

As our staff are part of the Local Health Network, pre-existing OH&S and staff policy procedures are complied with.

Referral pathways, bookings and reminders systems, follow-up procedures, record keeping and clinical handover, all needed to be adapted to fit the new service (within the structure of existing procedures). The following pages describe the procedures we have developed for our clinical services.

Generating Referrals

This may be an evolving process, as it was for the ccCHiP clinical service. When our clinic first started, the service medical director asked the registrars in the hospital wards to take responsibility for screening all their patients for fasting blood glucose and cholesterol. In the context of registrar education, it was explained that these screening tests should now form part of the admission blood test work-up, and needed to be completed and checked for every patient.

Despite this top down directive, few people were screened, and no referrals came through to the clinic at all. The next approach was a little more hands on. The CCMH medical director spent half of each Monday 'scouting for referrals' by asking nursing staff on each ward whether they were worried about any of the patients. At the time, approximately ten percent of patients were being screened for metabolic disorders on admission, and most were discharged having received only a cursory physical examination (in some cases none). After twelve months things had improved. Staff across the hospital were familiar with the idea of the clinic, but referrals were not systematically arranged or based on clear referral criteria. Screening rates had increased to approximately 80% of patients (with the assistance of the junior doctors working with the clinic) and had bloods screened on admission. From these 80% – amounting to around 30 patients per week, 5-6 of these new patients were routinely falling within the bounds of our referral criteria (any metabolic abnormality on blood profile).

Please see pages 71-72 for ccCHiP referral and screening forms now used in our clinical practice.

PRACTICE TIP:
Accepting referrals for any patient the staff are concerned about has been our continued approach, and promotes education and training. Figure 1 (see pages 67-70)demonstrates the current referral pathways we have found effective. Whatever processes are most suitable to the location (best integrated with current systems where possible), some form of bookings system is essential for a systematised clinical service.

Recording Keeping

ccCHiP have developed a flexible database system to record clinical information. This database contains the essential and minimum information required to formulate a management plan tailored to the individual's needs.

The ccCHiP clinical data form is built within Filemaker Pro software. This database system ccCHiP have developed will be available for use by our partners. To discuss this further, please contact our team.

The ethics requirements of your particular location need to be reviewed with respect to the storage of patient information. In general:

- Identifiable hard and soft copy patient information must be kept only at clinical locations and stored in a secure office.
- Utilising patient information in any but a clinical setting (e.g. for clinical research) requires specific ethics approval.

The ccCHiP database tool contains identifiable patient information, and as such, the above ethics requirements should be met in data storage so as to prevent breach of patient confidentiality.

We have been unable as yet to arrange for the data entry of these important aspects of clinical history and examination to be incorporated into the hospital medical information system. A system which is integrated to information systems at your site would be ideal - at this stage, what we have been able to achieve locally is limited to a clinic list on CERNER: All patients who have attended ccCHiP are recorded in one list on the informations system, those booked in for the next clinic in another.

The database system also generates a PDF letter that in some locations can be uploaded to the electronic record.

Clinical Handover

A vital component of a specialised service such as ccCHiP is to ensure that the findings and recommendations are speedily communicated with referrers and key staff involved in the patient's more global care (GPs, specialists, case managers, etc). Initially, the ccCHiP clinical handover comprised of direct documentation in the patient file, followed by a phone handover to the relevant clinician for patients with whom there were additional concerns.

PRACTICE TIP:
As clinical responsibility is shared between members of the multidisciplinary team, it is important that other members of the team are aware of suggestions/ changes to management with regards to metabolic health.

In 2010 ccCHiP changed its practice by sending a letter to all clinicians providing ongoing care. This may include GP, psychiatrist (inpatient and/or outpatient), case manager, registrar, NGO case manager (e.g. HASI team), and other existing specialist care providers such as psychologist, endocrinologist, diabetes clinic or cardiologist. In this way, a summary of care provided is copied to all involved in care, with recommendations included.

The letter writing is fully automated and is built in to the ccCHiP data tool. This ensures that communications are very rapid as letters can be completed and sent on the day of the clinic.

A de-identified example of the summary letter output by the ccCHiP data tool is included on Pages 73-74.

Evaluating Your Service

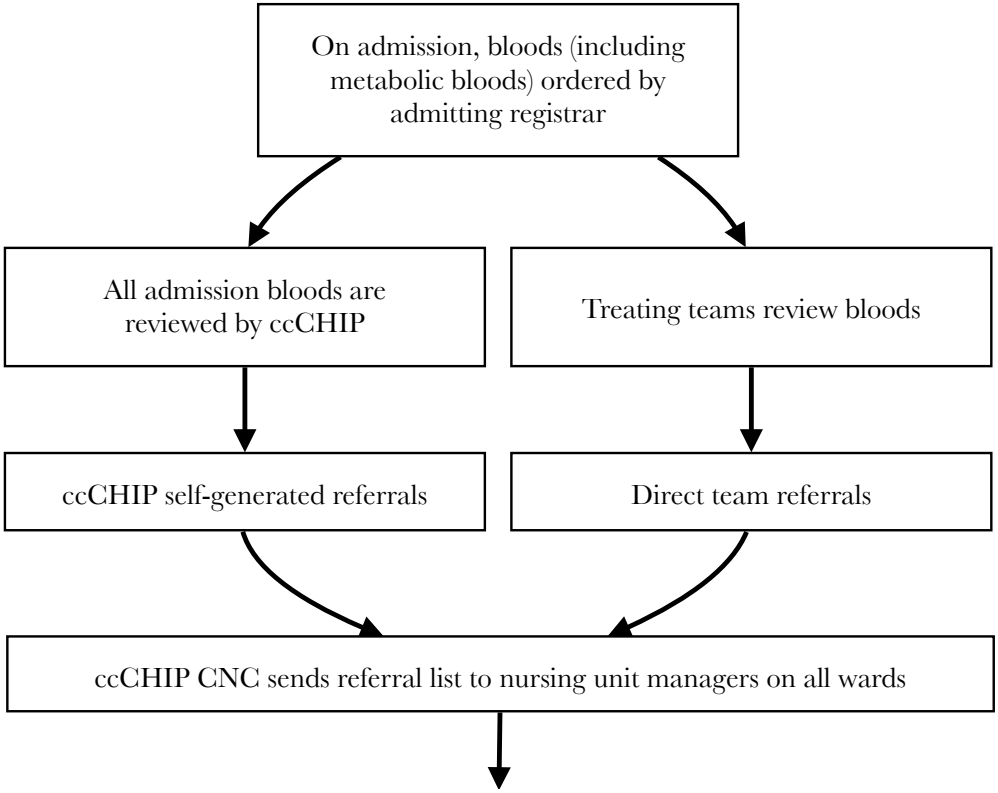
Evaluation should be built-in from day one of your service commencing. Prospective evaluation is far easier than retrospectively considering it.

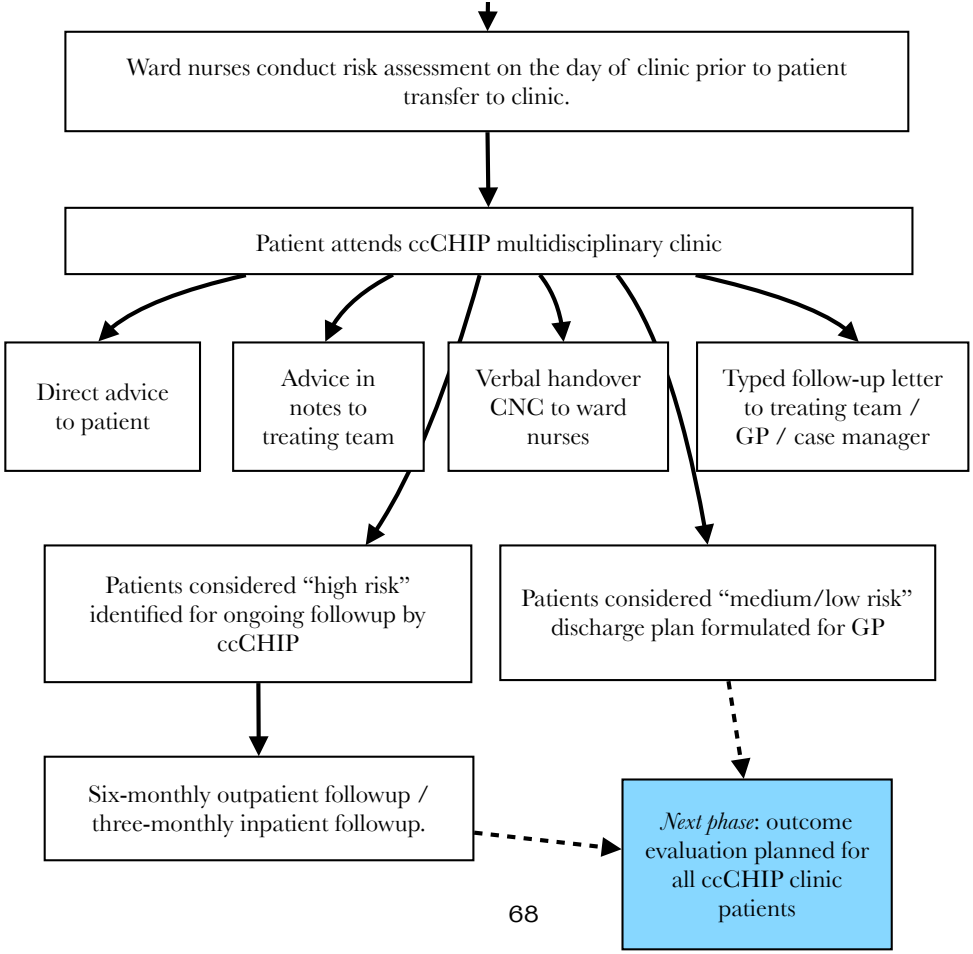
PRACTICE TIP:
Advantages of self evaluation include the following:
- improves your service,
- enables fine tuning of procedures,
- makes it easier to 'sell' what you are doing to management to enable longevity, and
- reassures you that you are on the right track.

Our experience has taught us that currently in NSW, the one thing you will be asked to prove is that you are **getting numbers through your service** - that you are meeting the need of as many consumers as possible.

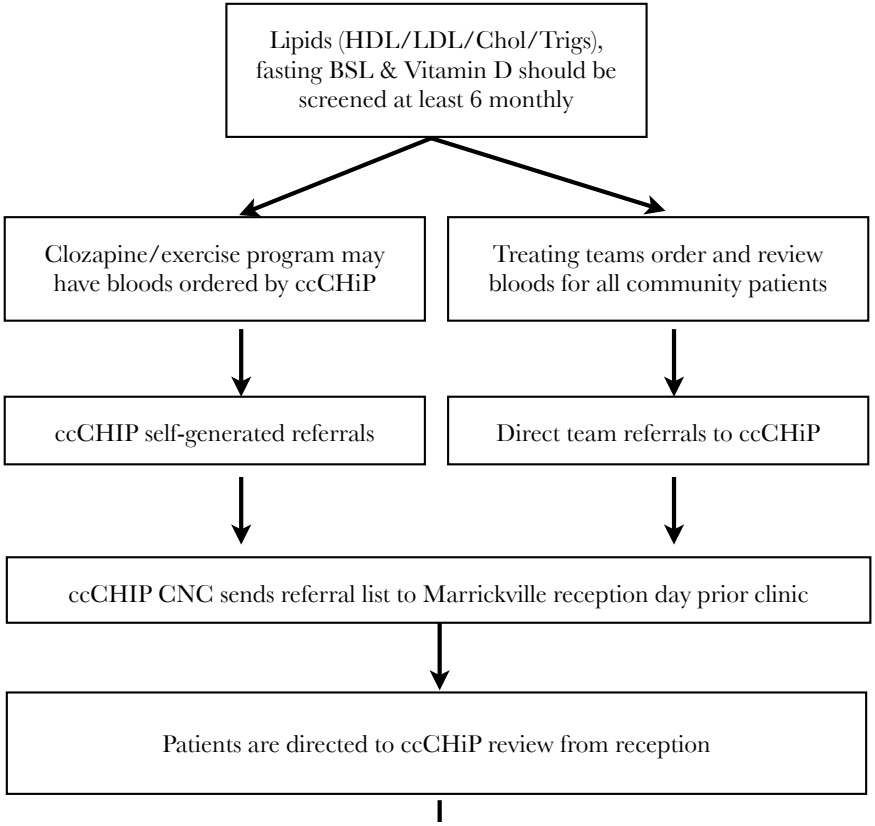
It will thus be essential you record this. More importantly though, consider the following areas for evaluation:
- cost,
- efficiency,
- Detection rates (diabetes/cholesterol problems), and
- health improvements over time.

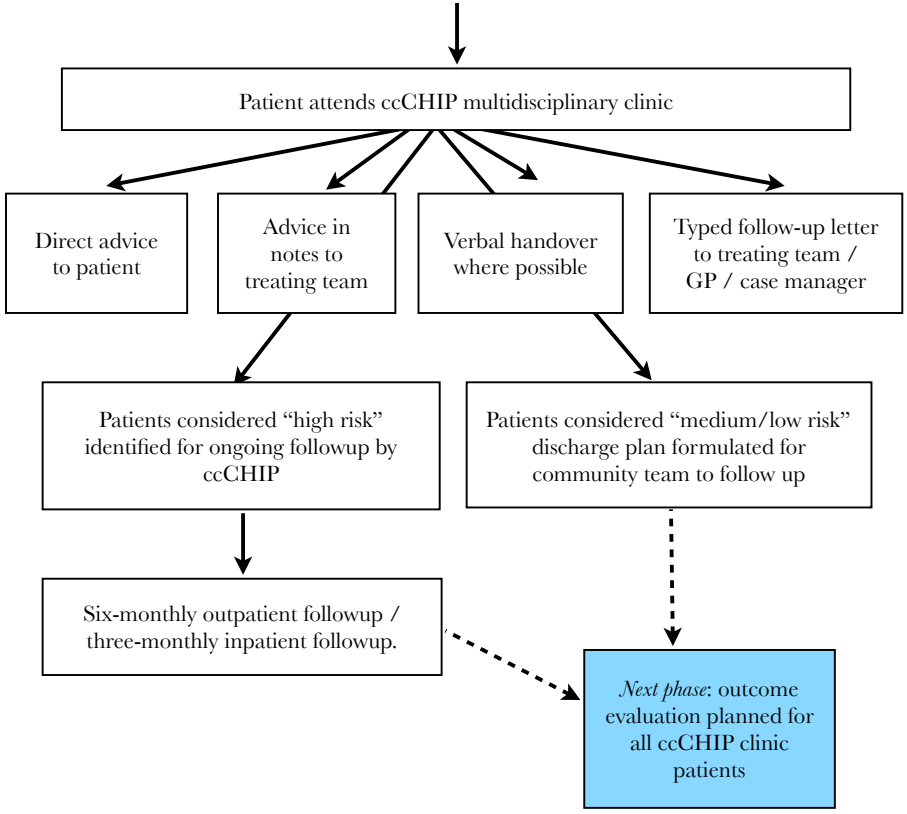
ccCHiP Clinic Referral Pathways (inpatient clinic)




Ward nurses conduct risk assessment on the day of clinic prior to patient transfer to clinic.
Patient attends ccCHIP multidisciplinary clinic
Direct advice to patient
Advice in notes to treating team
Verbal handover CNC to ward nurses
Typed follow-up letter to treating team / GP / case manager
Patients considered "high risk" identified for ongoing followup by ccCHIP
Patients considered "medium/low risk" discharge plan formulated for GP
Six-monthly outpatient followup / three-monthly inpatient followup.
Next phase: outcome evaluation planned for all ccCHIP clinic patients

ccCHiP Clinic Referral Pathways (outpatient clinic)




Patient attends ccCHIP multidisciplinary clinic
Direct advice to patient
Advice in notes to treating team
Verbal handover where possible
Typed follow-up letter to treating team / GP / case manager
Patients considered "high risk" identified for ongoing followup by ccCHIP
Patients considered "medium/low risk" discharge plan formulated for community team to follow up
Six-monthly outpatient followup / three-monthly inpatient followup.
Next phase: outcome evaluation planned for all ccCHIP clinic patients

Concord Centre for Cardiometabolic Health in Psychosis

Metabolic Screening Form

NSW Health

FACILITY: CONCORD HOSPITAL

ccCHIP
METABOLIC SCREENING FORM#

FAMILY NAME	MRN
GIVEN NAME	[ ] MALE [ ] FEMALE
D.O.B. _____/_____/_____	M.O.
ADDRESS	
LOCATION / WARD	

COMPLETE ALL DETAILS OR AFFIX PATIENT LABEL HERE

Height: …… Ethnicity: ……

Does the patient have a family history of any of the following? Please tick answer below:

Diabetes: [ ] Yes [ ] No [ ] Unknown
CVD*: [ ] Yes [ ] No [ ] Unknown
Obesity: [ ] Yes [ ] No [ ] Unknown
Psychosis: [ ] Yes [ ] No [ ] Unknown

Date				
Weight				
Waist				
BMI				
Blood Pressure Sitting				
Standing				
(f) BSL				
(r) BSL				
Cholesterol				
Triglycerides				
LDL - C				
HDL - C				
No. of cigarettes (daily)				
If given up, how long ago?				
Exercise?	[ ] Yes [ ] No	[ ] Yes [ ] No	[ ] Yes [ ] No	[ ] Yes [ ] No
If Yes, how many minutes per day / week				

This a basic form; full data can be entered using the full ccCHIP Dataform (Ring 9767-8982)
*CVD comprised of hypertension, stroke, angina or cardiac disease, large vessel disease

Print Name: …… Designation: ……

Signature: …… Pager No.: ……

BINDING MARGIN - NO WRITING

STOCK NO.: XXX XXX NOV 10 / REV 0

ccCHIP METABOLIC SCREENING FORM TRIAL

Clinic Referral Form

NSW Health

FACILITY: CONCORD HOSPITAL

REFERRAL TO ccCHIP METABOLIC CLINIC#

FAMILY NAME

GIVEN NAME

D.O.B. ____/____/____ M.O.

ADDRESS

LOCATION / WARD

MRN

[ ] MALE [ ] FEMALE

COMPLETE ALL DETAILS OR AFFIX PATIENT LABEL HERE

Have fasting bloods been ordered? [ ] Yes [ ] No
If no, please arrange the following fasting BSL, Cholesterol, Triglycerides, HDL, LDL and Vitamin D. Thank you.

What is the clinical reason for concern? .....

.....

Does this patient have a prior diagnosis of diabetes, hypertension, cardiovascular disease or hyperlipidaemia?

.....

Ward: ..... Treating Psychiatrist: .....

GP Name: ..... Phone: .....

Address: .....

Case Manager: ..... Community Centre: .....

Interpreter required? [ ] Yes [ ] No. If Yes, please schedule: .....

DIAGNOSIS:

Principle diagnosis: .....

Year of onset: ..... How many admissions to Hospital? .....

DEMOGRAPHICS: (tick to indicate answer)

Education level
[ ] None
[ ] Primary
[ ] Secondary
[ ] Post Secondary (eg TAFE)
[ ] Tertiary study (commenced degree)
[ ] Tertiary degree

Living with
[ ] Alone
[ ] Parents
[ ] Partner
[ ] Boarding house
[ ] Other

Vocational level
[ ] Attending school/college/training
[ ] Works full-time
[ ] Works part-time
[ ] Unemployed
[ ] Sickness benefit
[ ] Pension
[ ] Retired
[ ] Unknown

Marital status
[ ] Never married
[ ] Defacto
[ ] Married
[ ] Separated
[ ] Divorced
[ ] Widowed

This a basic form; full data can be entered using the full ccCHIP Dataform (Ring 9767-8982)
* CVD comprised of hypertension, stroke, angina or cardiac disease, large vessel disease

Name of Referrer: ..... Pager No.: .....

Signature: ..... Date: .....

Please return via fax 9767-8989 by 10am Monday prior to clinic.

STOCK NO.: XXX XXX NOV 10 / REV 0

BINDING MARGIN - NO WRITING

REFERRAL TO ccCHIP METABOLIC CLINIC

TRIAL

Concord Centre for Cardiometabolic Health in Psychosis

Example letter produced by database

(de-identified patient, identifying details changed or omitted)

Concord Centre for
Cardiometabolic Health
in Psychosis

Concord Centre for Mental Health
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Health
NSW
Sydney
Local Health Network

Psychiatrist: [redacted]

c.c.: **GP:** [redacted]
Ph: [redacted] Fax: [redacted]
Case manager: N/A

6/07/2011

Dear Dr

Re: [redacted] DOB: [redacted] MRN: [redacted]

We saw [redacted] a 60 year old male at ccCHIP clinic on 5/07/2011 to review his metabolic health.

KEY DEMOGRAPHICS
Diagnosis and Year of onset: Depression; [redacted]
Educational level: Tertiary degree
Vocational level: Pension
Living with: Alone
Marital status: Divorced

MEDICATIONS
Psychotropics: Risperidone - 2 mg/day; Mirtazapine - 15 mg/day; Duloxetine - 60 mg/day;
Medical: Metformin-; Atorvastatin20;

CARDIOMETABOLIC DATA
Parameters: Height: 169 cm. Weight: 91.3 Kg. BMI: **32** Waist: **112** cm BP: 120/62
Trig: **2.6** LDL-C: **4** HDL-C: **1** Cholesterol: **6.2** VitD:
Fasting BSL: **6.9** Random BSL: **19.8**, m 91-120 mins post prandial

CARDIOMETABOLIC RISK FACTORS
Family history: *Obesity:* Sister; *Diabetes:* Mother; Father; Sister; *CVD:* Father; *Psychosis:* None;
At-risk ethnicity: Father (Middle Eastern); Mother (Middle Eastern).

Smoking: Current (40+ per day, Daily. Smoked for years).
Orexigenic medications in last 2 months: Yes.
Orexigenic potential (current Rx): 4 High
Other diagnosed CM risks: Dyslipidaemia (prev. treated);
Exercise (IPAQ): (**Exercise (History):** None
Diet: Fast food meals each day with some home-, drinks 100 mls/day fruit juice, drinks 0 mls/day soft drink

METABOLIC SYNDROME; FRAMINGHAM RISK
Metabolic Syndrome (IDF): Present
Framingham 10yr CHD risk: 10-year CHD risk: 37%
10-year average CHD risk: 21%
Relative risk: 1.76 Risk level is Serious

RECOMMENDATIONS
Today we altered metformin dosing from 500 TDS to 500 mane plus 1g nocte. Ongoing diabetes monitoring (3 monthly metabolic review and annual foot, eye & kidney checks) is recommended. He will continue to see Dr [redacted] for his diabetes management. HBA1C requested for tomorrow. Please discuss the results of this with Dr [redacted] or myself and we will advise on further changes to his medication - which at present may be suboptimal. Dietitian review was briefly given today - [redacted] will arrange for additional dietitan review on the ward to explain diabetic diet in more detail.

Dr [redacted] - Sen Psychiatric Registrar

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