Medical Morbidity in Schizophrenia: Recognition & Management

Prof. David Castle

Chair of Psychiatry, St. Vincent’s Hospital Melbourne and The University of Melbourne

Adjunct appointments: Clinical Professor School of Psychiatry, Neurosciences University of Western Australia

Honorary Professor Department of Psychiatry, University of Cape Town

Adjunct Professor, Faculty of Health Sciences Australian Catholic University

Email: david.castle@svha.org.au
Excess Mortality in Schizophrenia

- Overall death rates 1.5 – 2 x general population

- **Increased death rates:** *(Harris & Barraclough, 1998)*
  - violence, suicide: 4.3 x
  - natural causes: 1.4 x

  (68% excess over expected deaths)

- ? Increasing mortality rates over time?

- **Life expectancy:** *(Newman & Bland, 1991)*
  - males 56yrs (vs. 72yrs)
  - females 66yrs (vs. 79yrs)
Causes of Death in Schizophrenia

- Suicide: 10 x risk
- Accidents: 2.5 x risk
- Infections
- Endocrine (notably diabetes)
- Cardiovascular (especially men)
- Respiratory
- Digestive
- Genitourinary

(Harris & Barraclough, 1998)
Mortality for Cancer

- **No overall increase**
  - **↓** rate of lung cancer deaths
    - ? die of other causes
    - ? Antitumour activity of antipsychotics?
  - **↑** rate of breast & GIT cancers

- Disparity between rates and deaths

(Newman & Bland, 1991)
Physical Illnesses in Schizophrenia

- Diabetes
- Hyponatraemia
- UTI
- Bladder Dysfunction
- Hypertension
- Liver Disease
- Seizures
- Visual Problems

(pary & Barton, 1988)

Note: low rate of rheumatoid arthritis (Jeste et al, 1996)
Obesity

- BMI $>30\text{kg/m}^2$
  (25-29 = “overweight”)

- 50% of US adults overweight
  (31% of men, 35% of women obese)

- Related to increased risk for:
  - diabetes
  - hypertension
  - CHD
  - arthritis
  - breast cancer

- Significant social stigma
Obesity in Schizophrenia

- Rates 2x general population
- Driven by diet & lifestyle medications

- Antipsychotics
  - 10 week data (Alison et al, 1996)
    - Clozapine 4.4kg
    - Olanzapine 4.1kg
    - Risperidone 2.1kg
    - Ziprasidone 0.04kg
    - Aripiprazole –1.0kg over 26 weeks (Carsson et al, 2002)
  - ? worse in adolescents (Theisen et al, 2001)

- Valproate
- Lithium
- Significant reason for non-adherence to medication
Management (1)

- **Warn** patient & institute diet/exercise regime early

- **Monitor** weight, BMI, abdominal girth (and triglycerides, fasting glucose, blood pressure)

- **Behavioural approach**
  - weight every visit (1-4 weeks)
  - diary of food intake & dietician advice
  - exercise classes

(Wirshing et al, 1999)
Management (2)

- **Medications**
  - select antipsychotic or switch
  - sibutramine (5HT / NA reuptake inhibitor) / orlistat (inhibits gastric lipases)
  - Topiramate (anticonvulsant), Nizatidine (H2 blocker) – small trials of some promise
  - Metformin – successful trials with olanzapine
  - Aripiprazole – adjunctive to clozapine
  - Melatonin – RCT vs PBO
Cardiovascular Disease & Hyperlipidaemia

- Steady \( \uparrow \) in CVD in western countries
- 70% of mortality accounted for by:
  - hypertension
  - smoking
  - diabetes
  - hyperlipidaemia
    all elevated in Schizophrenia

- Schizophrenia patients 2.5x more likely than general population to die of CVD  
  (Brown et al, 2000)

- Less likely to have lipids monitored, or to receive lipid lowering drugs  
  (Hoerges, 1995)

- In US, cardiac catheterisation following M1 is 41% lower for people with Schizophrenia  
  (Druss et al, 2000)
Modifiable Risk Factors for CVD in Schizophrenia

- Elevated total cholesterol: 20%
- Hypertension: 20%
- Smoking: 70%
- Overweight / Obesity: 40-60%
- Sedentary Lifestyle: 70%
- Diabetes: 15%

These contribute to overall CVD risk in an additive manner (from Meyer, 2003)
Hyperlipidaemia

- linear relationship between CVD and serum cholesterol 
  (Stamler et al, 1986)
- reducing TC and LDL significantly reduces CVD risk
- use of statins effective (target 3-hydroxy 3-methylglutaryl coenzyme A – HMGCOA reductase involved in cholesterol synthesis)
Hyperlipidaemia and Antipsychotics

- ↑ TG and ↓ HDL associated with
  - phenothiazines
  - dibenzodiazepines (clozapine, olanzapine, quetiapine)
  (Stamler et al, 1986)

- ↑ TG rapid (eg. 12% ↑ LDL after 6 weeks of olanzapine)
  ..... And peaks around 1 year
  (Glick et al, 2001)

- ↑ TG not consistently associated with ↑ weight
Clinical Recommendations

- screening for risk factors
  (e.g., Smoking, FH of CVD, bp and weight)
- baseline lipid profile and annually thereafter
- with higher-risk antipsychotics, quarterly fasting TG & TC over first year
- advice about diet, lifestyle
- if persistently high LDL, TG, TC, use statin

(see Meyer, 2003)
Cardiac Issues

- ACh effects ➔ tachycardia
- $\alpha_1$, adrenergic effects ➔ postural hypotension
Cardiac Conduction

- prolonged QTc due to effects on $K^+$ channels delay repolarisation
QTc and Antipsychotics

- resting QTc typically
  - < 420 ms ♂
  - < 430 ms ♀
- risk of sudden death
  (torsades de pointes, ventricular fibrillation)
  at QTc > 500 ms
Which Antipsychotics Affect Cardiac Conduction?

- thioridazine 35 ms
- haloperidol 5 ms
- ziprasidone 20 ms
- risperidone
- olanzapine all < 15 ms
- quetiapine

also concern about
- droperidol
- pimozide
Glucose Intolerance & Diabetes

ADA Criteria: (Lebovitz, 2001)

Clinical Factors + random glucose ≥ 11.1 mmol/l
or fasting glucose ≥ 7 mmol/l
or GTT glucose ≥ 11.1 mmol/l

For glucose intolerance,
fasting glucose > 5 mmol/l

Type I diabetes = problem of insulin secretion

Type II diabetes = insulin resistance
(hepatic, skeletal muscle, adipose tissue)
Factors Associated with Type II Diabetes

- genetic predisposition
- central obesity
- excess caloric intake
- high fat ingestion
- ↓ physical activity

PLUS: Medications, by

- ↑ appetite
- altered fat distribution
- sedation - ↓ activity
- interfere with insulin cascade
- ↑ FFA release from fatty tissue

(Lebovitz, 2001)
Medical Complications & Diabetes

**ACUTE:**
- DKA (pH ≤ 7.35, HCo3 ≤ 15, Ketonaemia)

**CHRONIC:**

- **MACROVASCULAR**
  - CVD, Stroke
  - Peripheral Vascular Disease

- **MICROVASCULAR**
  - Peripheral Neuropathy
  - Renal Impairment
  - Retinopathy
Elevated rates antedate antipsychotics

Rates with typical agents, notably phenothiazines

Atypicals
- Dibenzodiaepines ➔ weight gain
- ? Direct diabetogenic effect
# Diabetes & Schizophrenia

(Koller et al, 2001)

<table>
<thead>
<tr>
<th></th>
<th>Diabetes</th>
<th>DKA</th>
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<tbody>
<tr>
<td>Clozapine</td>
<td>242</td>
<td>80 (25+)</td>
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<tr>
<td>Olanzapine</td>
<td>225</td>
<td>100 (25+)</td>
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</tbody>
</table>
Diabetes & Schizophrenia (3)

Harvard 5-year Study of 101 Participants on Clozapine:
- Prior diabetes exacerbated
- 36 new cases
  (Henderson et al, 2000)

Olanzapine:
- Case reports of diabetes & DKA
- Case reports of diabetes resolving once Olanzapine stopped

Risperidone:
- A few reports, mostly in people already predisposed

Quetiapine:
- Possible modest increase in risk (?related to weight gain)
Screening & Monitoring

- risk assessment (FH, obesity, etc.) (Henderson & Ettinger, 2003)
- baseline fasting glucose (and other bloods)
- advice regarding diet and exercise
- regular fasting glucose every 6 months and more frequently if risk factors, eg.
  - age > 45yrs
  - ethnicity (Indian, African)
  - obese
  - FH of diabetes
  - prior elevated plasma glucose
  - prior gestational diabetes
- if patient develops diabetes
  - consider change of antipsychotic to low-risk agent
  - treat & monitor
Prolactin

A Substantia nigra
B Ventral tegmental area
C To amygdala
D Tubero-infundibular DA system
E Nucleus accumbens (ventral striatum)
F To the striatum (caudate nucleus, putamen and globus pallidus)
G Frontal cortex
Antipsychotics and Prolactin

- typical agents
  - amisulpride
  - risperidone

  \[\text{↑ prolactin}\]

- olanzapine
  - modest transient

- quetiapine
- clozapine
- ziprasidone
- aripiprazole

\[\text{no ↑}\]

(Perkins, 2003)
Clinical Implications

- gynaecomastia
- galactorrhoea
- potential ↑ breast cancer
- ↓ libido
- sexual dysfunction
- menstrual irregularities
- osteoporosis

(Perkins, 2003)
Clinical Implications

- **ask** about endocrine – related issues including sexual functioning
- ensure appropriate checks for e.g. breast cancer
- baseline and annual prolactin checks
  - if high (?) how high) consider switch of agent
Other Medical Issues in Schizophrenia

- Smoking
- Alcohol
- Illicit substances
- Hep C / HIV

(Perkins, 2003)
Conclusions

- People with Schizophrenia are at increased risk for a number of medical conditions

- These are often undetected and untreated, with subsequent elevated morbidity and mortality

- Optimal medical care, and extra monitoring in high risk individuals, is required
**ST VINCENT'S MENTAL HEALTH**

**METABOLIC MONITORING**

**INSTRUCTIONS FOR USE:**
- This form should be used for all patients on antipsychotics or mood stabilisers. It is suggested pertinent positive or negative results are documented in the boxes.
- **Clozapine:** This form is to be used only after the first 18 weeks.
- An authorised signed entry to be completed in the medical record progress notes for each measure on each occasion.
- Filling: this form should be filed in the Mental Health forms section of the record in order of most recent date of entry.

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<th>30 Months</th>
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<td><strong>Metabolic</strong> (for all patients on antipsychotics and mood stabilisers)</td>
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</table>
| **Clozapine**  
*Note: FBE as per Clozapine protocol* | | | | | | | | |
| ECG | | | | | | | | |
| Echocardiogram | | | | | | | | |
| Troponin VCK | | | | | | | | |
| Clozapine Level | | | | | | | | |
| **Prolactin elevating antipsychotics** | | | | | | | | |
| Prolactin Level | | | | | | | | |
| **For patients on QTc prolonging antipsychotics** | | | | | | | | |
| ECG | | | | | | | | |

Print name & signature of doctor completing this collection occasion:
The Impact of Psychotropic Weight Gain on People with Psychosis

Professor David Castle
Dr. Marlene Tham
Dr. Simon Jones
Dr. James Chamberlain
Background

- weight gain problematic for Australians in general and for people with psychotic illnesses in particular.
Weight Gain

- medical morbidity (CVD, diabetes)
- medication adherence
- body image
- QoL
Participants

- 42 participants
  - 32 male
  - 10 female

- age range 20-55 (mean 40)

- 33 schizophrenia

- medical issues
  - 3 diabetes
  - 5 hypertension
  - 2 angina
  - 8 hypercholesterolaemia
Habits

- 76% smokers (mean 28 per day)
- 31% regular alcohol (mean 1.8 daily)
- take-away meals 2.6 times weekly
  (14% 4-6 times)
- 2 subjects had established exercise routine
Catchment Area
Catchment Area: Dangers!
Catchment Area: **Dangers!**

**Original Glazed**

### NUTRITION INFORMATION
SERVINGS PER PACKAGE: 12*
SERVING SIZE: 52 g

<table>
<thead>
<tr>
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<th>PER SERVING 52g</th>
<th>PER 100 g</th>
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<tbody>
<tr>
<td>ENERGY</td>
<td>835 kJ (198 Cal)</td>
<td>1619 kJ (384 Cal)</td>
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<tr>
<td>PROTEIN</td>
<td>2.5 g</td>
<td>4.7 g</td>
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<tr>
<td>FAT - TOTAL</td>
<td>12 g</td>
<td>23 g</td>
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<tr>
<td>- SATURATED</td>
<td>3.0 g</td>
<td>5.7 g</td>
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<tr>
<td>CARBOHYDRATE</td>
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<td></td>
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<tr>
<td>- TOTAL</td>
<td>22 g</td>
<td>42 g</td>
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<tr>
<td>- SUGARS</td>
<td>10 g</td>
<td>20 g</td>
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<tr>
<td>SODIUM</td>
<td>96 mg</td>
<td>187 mg</td>
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Note: All values are considered average.

INGREDIENTS: **DOUGHNUT:** (ENRICHED BLEACHED WHEAT FLOUR (BLEACHED WHEAT FLOUR, NIACIN, REDUCED IRON, THIAMINE MONONITRATE, RIBOFLAVIN, FOLIC ACID), GLUCOSE, VEGETABLE OIL (SOYBEAN, CANOLA AND/OR PALM), WATER, SUGAR, GLUTEN, EGG YOLKS, YEAST, NON FAT MILK SOLIDS, SALT, EMULSIFIERS (471, 322), PRESERVATIVES (282, 321), GUM BASE, NATURAL AND ARTIFICIAL FLAVOURS, ENZYMES, SODIUM CASEINATE, CORN MALTODEXTRIN, CORN SYRUP) **GLAZE:** (SUGAR, WATER, MINERAL SALTS (170, 339), THICKENERS (406, 410), EMULSIFIER (491), CORNSTARCH, SALT, NATURAL AND ARTIFICIAL FLAVOURS)
Catchment Area: Dangers!
Body Mass Index

- 88% overweight (BMI >25) vs 60% general population
  - males 88%
  - females 90%

- mean BMI
  - 30 for males; highest 45
  - 32 for females; highest 40

- 80% waist circumference
  - 94cm (males)
  - 80cm (females)
IWQoL-Lite

“because of my weight ………”

items:
- physical function
- self esteem
- sexual life
- public distress
- work

each item rated 1-5

1 = never
5 = always

\{ \text{affects on life} \}
Impact on Adherence

- 64% thought of stopping meds
- 16% actually stopped
- More non-adherence in those with more impact on QoL
Relationship Between QoL and BMI

Regression Results

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Estimate</th>
<th>95%CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coefficient of BMI (all subjects)</td>
<td>-1.0</td>
<td>-2.3 to 0.3</td>
</tr>
<tr>
<td>Coefficient of BMI (client 25 removed)</td>
<td>-1.8</td>
<td>-3.2 to -0.5</td>
</tr>
</tbody>
</table>
Metabolic Parameters

- 24% fasting glucose > 6.0
  (only one prior diagnosis of diabetes)

- 36% cholesterol > 5.2 (mean 5.6)
  (4 previously undiagnosed)
What To Do About It
What To Do About It
What To Do About It
What To Do About It

Does this outfit make my ass look big?
What To Do About It
What To Do About It
What To Do About It

Or:

have a concerted strategy
Implementation of Metabolic Monitoring

Bridget Organ
Manager Community and Primary Mental Health
Getting Started

- development of the form
- development of the Fact Sheet
- medical records considerations
- education of all clinical staff
- adequate equipment
**INSTRUCTIONS FOR USE:**
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<tbody>
<tr>
<td><strong>Metabolic</strong></td>
<td><strong>INSERT RESULT IN EACH CELL</strong></td>
<td><strong>Height</strong></td>
<td><strong>Weight (in kg)</strong></td>
<td><strong>BMI = weight in kg by height in m2.</strong></td>
<td><strong>Waist</strong></td>
<td><strong>Blood Pressure</strong></td>
<td><strong>Fasting Blood Glucose</strong></td>
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<td><strong>Clozapine</strong></td>
<td><strong>ECG</strong></td>
<td><strong>Echocardiogram</strong></td>
<td><strong>Troponin VCK</strong></td>
<td><strong>Clozapino Level</strong></td>
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<td><strong>Prolactin elevating antipsychotics</strong></td>
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<td><strong>For patients on QTc prolonging antipsychotics</strong></td>
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*Print name & signature of doctor completing this collection occasion:*
Fact Sheet

Guidelines for Staff:

OVERVIEW
- People with severe mental illness are at increased risk for a number of medical conditions.
- These are often undetected and untreated, with subsequent elevated morbidity & mortality.
- Routine monitoring of weight, glucose and serum lipids are required.
- Optimal medical care, and extra monitoring in high risk individuals, is required.

Obesity
- BMI (Body Mass Index) = Weight in kg / height in m²
- Normal BMI = 18.5-25 kg/m² = “normal” (25-29 = “overweight”)
- Related to increased risk for:
  - Diabetes
  - Hypertension
  - Cardiovascular disease (CVD)
  - Arthritis
  - Breast cancer
- Significant social stigma

Obesity in Mental Illness
- Rates > general population
- Driven by Diet & Lifestyle + Medications
- Antipsychotics
  - 10 week data
  - Clozapine 4.4 mg
  - Olanzapine 4.1 mg
  - Risperidone 2.1 mg
  - Ziprasidone 0.5 mg
  - Aripiprazole = 0.5 mg over 26 week
  - Ziprasidone essentially weight neutral (Carssen et al., 2002)
- Possibly worse in adolescents (Thelen et al., 2001)
- Varenicline
- Lithium
- Significant reason for non-adherence to medication

Management
- Work patient & institute diet/exercise regime early
- Monitor weight, BMI, abdominal girth (and triglycerides, fasting glucose, blood pressure)
- Behavioral approach (Winshing et al., 1989)
  - Weight every visit (1-4 weeks)
  - Diary of food intake & dietary advice
  - Exercise classes
- Medications
  - Select antipsychotic or switch to agent with less propensity to weight gain
  - Some potential weight-loss agents available. Refer for medical review.

Hyperlipidaemia
- TG and HDL (high density lipoprotein) associated with:
  - Phenothiazines
  - Olanzapine, Clozapine, Quetiapine
  - CVD (Stamler et al., 1986)
- TG rise & peak after 6 weeks of olanzapine (Meyer, 2003)
- TG may not consistently associated with weight (Glick et al., 2001)

Clinical Recommendations
- Screening for risk factors (e.g. smoking, family history of CVD, age and weight)
- Baseline lipid profile and annually thereafter
- With high risk antipsychotics, quarterly testing of TG & TC
- Advice about diet, lifestyle
- If persistently high LDL, TC, TG, use statin (Meyer, 2003)

Glucose Intolerance
& Diabetes
- Normal range 4-7 mmol/L
- American Diabetes Association (ADA) Criteria:
- Clinical Factors:
  - Random glucose ≥ 11.1 mmol/L
  - Fasting glucose ≥ 7 mmol/L
  - Oral GTT glucose ≥ 11.1 mmol/L
- For glucose intolerance:
  - Fasting glucose ≥ 5 mmol/L
- Type 1 diabetes: Problem of insulin secretion
- Type 2 diabetes: Insulin resistance
  - Hepatic, skeletal muscle, adipose tissue (Lebovitz, 2001)

Factors Associated with Type II Diabetes
- Genetic predisposition
- Central obesity
- Excess caloric intake
- High fat ingestion
- Physical activity
- Physical activity
- Physical activity

Pharmacological treatments:
- Appetite suppressants
- Altered fat distribution
- Weight loss
- Exercise
- Interferon with insulin cascade
- FFA (free fatty acids) release from fatty tissue
Fact Sheet

Diabetes & Antipsychotics
- Clozapine 5-year study of 101 participants (Henderson et al., 2000)
  - Prior diabetes exacerbated 38 new cases
- Olanzapine
- Case reports of diabetes & DKA (diabetic ketoacidosis)
- Case reports of diabetes resolving once Olanzapine stopped
- Risperidone
  - A few reports, mostly in people already predisposed
- Quetiapine
  - Possible modest increase in risk (related to weight gain)
- Aripiprazole
  - No evidence to suggest any elevated risk
- Ziprasidone
  - No evidence to suggest increased risk

Screening & Monitoring (Henderson et al., 2000)
- Risk assessment (family history, obesity, etc.)
- Baseline fasting glucose (and other bloods)
- Advice regarding diet and exercise
- Regular fasting glucose every 6 months and more frequently if risk factors, e.g.:
  - Age > 45yrs
  - Ethnicity (Indian, African)
  - Obese
  - Family history of diabetes
  - Prior elevated plasma glucose
  - Prior gestational diabetes
- If patient develops diabetes:
  - Diet & exercise and general measures
  - Consider change of antipsychotic to low-risk agent
  - Treat & monitor

Hyperprolactinaemia
- Normal range 0-20 ng/ml
- Pregnant Women 10-300 ng/ml
- Notably with typicals and risperidone, aripiprazole
- Association with sexual dysfunction & menstrual irregularities
- Galactorrhoea / breast enlargement
- Long term osteoporosis?
- ↑↑ risk of breast cancer

Screening & Monitoring
- Suggest baseline and annual prolactin levels for prolactin-elevating antipsychotics
- If markedly persistently high - medical/endeocrine review; if any side effects of concern consider switch to other antipsychotic.

Cardiac
- Prolonged QTc due to effects on K+ channels delay repolarisation

![Cardiac Diagram]

QTc and Antipsychotics
- Resting QTc typically: Females < 420 ms, Males < 430 ms
- Risk of sudden death (torsades de pointes, ventricular fibrillation) at QTc > 500 ms

Which Antipsychotics Affect Cardiac Conduction?
- Thioridazine 35 ms
- Haloperidol 5 ms
- Ziprasidone 20 ms
- Risperidone
- Olanzapine all < 15 ms
- Quetiapine

Also concern about:
- Droperidol
- Pimozide

Screening & Monitoring
- Baseline and at least annual ECG for patients with any pre-existing cardiac problem and for all patients starting Ziprasidone.

Disclaimer
The information contained in this leaflet is not intended to be a substitute for medical care. Decisions regarding treatment are the sole responsibility of the treating physician. This information is not intended to be a substitute for medical advice. The reader should consult their treating physician before commencing any new treatment. The reader should consult with their treating physician if they are uncertain of the information contained in this document or if they are unsure about the suitability of any medical treatment. This information is not intended to be a substitute for medical advice. The reader should consult with their treating physician if they are uncertain of the information contained in this document or if they are unsure about the suitability of any medical treatment.
Implementation Issues

- who’s job is it?
- how do we involve GP’s?
- recording the results
- monitoring the monitoring at clinical review
- guidelines formalised
- outcomes so far
Dear Dr. ________________________,

Re: ____________________________________________ (name)

Address: __________________________
____________________________________

Medication: __________________________

St Vincent’s Mental Health has initiated metabolic screening for people who are on anti-psychotic or mood stabiliser medication due to the associated increased risks for a number of medical conditions. Rather than duplicate investigations, would you kindly provide the results on the form attached. Where results are too numerous to fit on the form (eg. LFTs), please write only ‘normal or ‘abnormal’ in the space provided; and if s/he refuses any particular tests please write ‘refused’.

Please also cc any pathology tests ordered to Dr. ________________________ who is currently her/his treating doctor.

Please note that the case manager is: __________________________

We would appreciate it if you would return the form to us in the envelope provided so that we can use it on a longitudinal basis. We anticipate completing the tests for this person on a 6-monthly basis.

Thank you for your assistance.

Yours sincerely,

Signed: __________________________

(print name): __________________________
Next Steps

- audit of compliance
- what have we found?
- what have we done?
- information for consumers and carers
- education for staff
- programs
The Healthy Lifestyles Project: Pilot Data from a Multi-component Risk Factor Intervention for People With Severe Mental Illness

Professor David Castle
Chair of Psychiatry, St. Vincent’s Hospital Melbourne
Dept. of Psychiatry, The University of Melbourne
Email: david.castle@svha.org.au

Funded by the Commonwealth Department of Health and Ageing
Healthy Lifestyles Project
Funded by the Commonwealth Department of Health and Ageing

A/Prof. Amanda Baker
Dr. Frances Kay-Lambkin
Ms Rebecca Sakrouge
Centre for Brain and Mental Health Studies, University of Newcastle

Prof. Robyn Richmond
Ms Rachel Taylor
School of Public Health & Community Medicine, University of NSW

Prof. David Castle
Ms Diane Harris
St. Vincent’s Hospital, University of Melbourne

Prof. Jayashri Kulkarni
Sacha Filia
Mr Anthony de Castella
APRC, The Alfred and Monash University
School of Psychology, Psychiatry and Psychological Medicine
Aims of the Project

- Assess the feasibility of conducting a multi-component risk factor intervention to promote smoking cessation and change in body mass index (BMI) among people with psychosis.

- Determine if a reduction in smoking and weight is associated with improved body image, ↓ depression and ↑ quality and enjoyment of life
Aims of the Project

Simply: result in change in participant’s lifestyle, and cardiovascular risk factors in terms of 3 main areas:

1. Smoking
2. Diet
3. Level of Physical Activity
Target Group

- People aged 18-60 with a diagnosis of psychosis
- Current cigarette smoker
- Body Mass Index (BMI) of >30
- Informed consent
- Willing to attempt to make some change in their smoking, diet, and level of physical activity
Study Design

- Informed Consent
- Baseline Assessment
- Intervention program for 11 weeks
- Second assessment at 3 months by an independent rater
Assessments

- Demographic details
- Physical measures
- Smoking and Drug use History
- Dietary Record
- Physical Activity Log
- Test for Nicotine Dependence
- Carbon Monoxide Reading
- Reasons for Smoking/Quitting
Assessments

- Readiness and Motivation to Change
- Diagnosis
- Levels of psychosis and depression
- Medication
- Quality of Life
- Nicotine Withdrawal Symptoms
- Side-effects rating scale
Assessments of Cardiovascular Risk Factors

- **Baker Heart Research Institute**
  - Prof Garry Jennings; Prof Simon Stewart; Jan Jennings

- **Overall Coronary Risk Percentile**
  - Blood pressure, cholesterol, smoking
  - Age and gender
  - 50 average
  - > 80 highest risk
The Intervention

- Weekly sessions for 7 weeks
- Two booster sessions (Week 9 and Week 11)
- Nicotine Replacement Therapy (NRT): Nicabate CQ patches and Lozenges
  - Step 1: 21mg patch for 6 weeks
  - Step 2: 14mg patch for 2 weeks
  - Step 3: 7mg patch for 2 weeks
The Intervention

- Cognitive Behaviour Therapy (CBT)
  - Motivational Interviewing
- Provision of Education:
  - Smoking and smoking cessation
  - Diet
  - Physical activity
- Resources:
  - Pedometer
  - Information sheets/handouts
Results

- Four sites: 43 participants

- Treatment sessions:
  - < 5 sessions = 5 (11.6%)
  - 5-8 sessions = 2 (4.7%)
  - All 9 sessions = 36 (83.7%)

- Follow-up assessment:
  - 43 participants (100%!)
Sample Details

- 43 participants
- Mean age: 36 years
- 58% male
- Most common diagnoses:
  - Schizophrenia (54%)
  - Schizoaffective disorder (26%)
Smoking Results

- A significant decrease in the number of cigarettes smoked over time
  - 30.8 cig/day to 17.2 cig/day, $p = .000$

- Smoking status:
  - No change or increase = 16%
  - Less than 50% reduction = 35%
  - 50% reduction or more = 49%

- No cigarettes in past week = 19%
- Not a single cigarette since QUIT date = 12%
Weight Results

- Non-significant decrease in weight over time
  - 101kg to 99kg, \( p = .014 \)

- Non-significant decrease in BMI over time

- Weight status:
  - No change or weight gain = 46%
  - Up to 5% reduction in body weight = 33%
  - More than 5% reduction in body weight = 21%

- Significant improvement in Quality of Life related to Weight over time
Exercise Results

- Almost significant increase in number of exercise sessions per week over time
  - 3.3 times to 4.8 times/week, $p = .003$

- Significant increase in the frequency of moderate exercise sessions over time
  - 2.4 times to 3.4 times/week, $p = .001$
Cardiovascular Risk Results

- Significant decrease in Overall Coronary Risk Percentile over time
  - 74 to 64, p = .001

- Fewer participants with an Overall Coronary Risk Percentile > 80 at follow-up:
  - 55% vs 42%
Limitations of the Study

- Duration of treatment
- No control group
- Resources and time
Next steps

- Increased number of subjects
- Longer duration of treatment and follow-up
- Control group
- Sub-study with varenicline
What To Do About It

Big bum

**AVOID:**
Booty shorts and high-waisted jeans with no pockets.

**GO FOR:**
Fitted dresses, jeans with smallish pockets that sit on the lower half of your bum, and darker colours on your bottom half work best.