



# “Clozapine comes out of the closet”

## Nurse-led Clozapine Clinics

Clozapine Coordinators:

Grace Macdonald MHN, RN, Grad dip health Counseling

Michele Bentley Grad dip MHN, RN

Southern Mental Health

March 2011



**Government  
of South Australia**

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SA Health

# Inner Southern Mental Health



**Carramar Clinic**  
179 Greenhill Rd, PARKSIDE



**Marion Clinic**  
820 Marion Rd, MARION



**GP Plus Marion**

# CHANGE

- > Major change
  - Clozapine
  - Health reform
- > Old habits die hard
  - Sometimes work
  - Sometimes don't work



# Need for Change

- > Identify the problem
- > Problem solve
- > Investigate
  - Projects (CPI)
  - Reports



# Resistance





# Clozapine

Historical issues:

**safety**

**variability**

**coordination and monitoring**

# Variations

- > Consumer demographic
- > Clozapine clinics
- > Coordinators
- > Prescribing
- > GP shared care program





# Clozapine (Clozaril or Clopine)

- > Highly effective oral atypical antipsychotic
- > Used in treatment resistant schizophrenia
- > Reduced parkinsonian side effects
- > Developed in the 60's
- > Withdrawn in 1975 due to 8 deaths & 16 cases of agranulocytosis - 2260 (0.7%)
- > Later reintroduced 1990 in UK with conditional blood monitoring
- > Strict monitoring programme (Aust):
  - Clozaril Patient Monitoring System (**CPMS**)
  - Clopine Connect



# Historically

## Moved from:

- > Years of haphazard monitoring and prescribing
- > Consumers were not always seen face to face for a health check
- > Deaths associated with comorbidities

## To the present:

- > Monitoring stepped up over past decade
- > But still, there are significant differences across Adelaide



# Why the monitoring?

- > Reportedly a bone marrow depressant
- > Hence risk of blood disorders  
    low blood count → INFECTION
- > Cardiac risks
- > Weight gain → RISKS / metabolic syndrome
- > **Mandatory CBE** (1-4 weekly & prn)
  - **White cell count (WCC)**
  - **Neutrophil count (NC)**



# Significant Clinical Issues

- > Increasing number of consumers prescribed Clozapine
- > Insufficient medical resources to maintain doctor-led clinics
- > We have recognition and support of Novartis
- > Changing protocols in progress:
  - Instigation of nurse-led clinics
  - Prescribing protocol reviewed by TGA
  - GP prescribing under current review



## Significant change

- > Changed **from** the requirement for a medical officer to conduct the clinical examination of a consumer
- > **To** allow clinical examination to be conducted by a suitably qualified nurse



# Requirements for a Nurse-led Clinic

- > There is significant evidence to support the effectiveness of nurse-led clinics
- > Quantity does not need to compromise quality (remains debatable among coordinators)
- > Need for clear procedures and processes
- > Clear decision making tools (pathway documents)
- > Education process for coordinators
- > Benchmarking clinics (Barwon)

# Coordinator Role

- > Administrative
- > Clinical / medical
  - Ongoing monitoring
  - Recording of data
- > Collaboration with the consumer
- > Crisis management
- > Reporting
- > Educational and professional development of mental health workers
- > Peer support and advice
- > Central reference point
- > Liaison with all stake holders
- > Evaluation and role development
- > Overall coordination





# A problem worth solving

- > **230+ consumers** in the southern sector
- > Significant **variability** in the blood monitoring component of consumers presenting:
  - Medical risk
  - Duplication/omission
  - Inefficiency
  - Stress to staff
  - Unnecessary invasive blood tests for consumers, etc
- > Potential for **reduced risk** and **cost savings**
- > Coordinators want **clarity** and **less stress**
- > Consumers want a **safe** and **efficient** service
- > AHS striving for **standardisation** to obtain **consistency of clinical practice**
- > **Drug companies** are keen to maintain safety & promote their product



# Regional Changes

> Standardisation driven by:

- **Statewide focus group** led by Dr Merricc Edgar-Hughes
- **Working group** led by Dr Scott Clark and Lisa Wilton
- **Review of Clozapine Management in SA** by Mike Quaass, Mental Health Unit
- **Regional staff and management**



# Policy and protocol

- > Pathways (clinical decision & relationships)
  - clinics
  - shared care
- > Eligibility
- > Commencement policy
- > Shared care protocols
- > GP training and accreditation



## **Clinical issues for Standardisation & consistency**

- > Smoking risks
- > Constipation risk
- > Heat risk
- > Alert processes within the health system
- > Metabolic syndrome
- > Documentation and integration with  
Community Based Information System  
(CBIS)
- > Transfer of care to other clinics



# Community Pharmacy Process

- > Multiple community pharmacies
- > Education of pharmacists
  - Procurement process
- > Payment
  - Reimbursement process
  - Consumer – no cost
- > Management of scripts
- > Liaison



# Clinical Practice Improvement Project (CPI)

- > Identified the problem
- > Targeted blood testing component
- > Key staff were involved in the project
- > Mapped & analysed the problem
- > Revealed staff lack of knowledge
- > Variables
- > Stimulated change
- > Increased recognition
- > Empowering



**It's an ongoing process**



## The issues at a glance

- > Life threatening risks
- > The role is complex
- > Significant protocol requirements
- > Many steps to the process
- > Multiple people involved
- > Unpopular job
- > Blood test results - various modes  
Phone – Fax – Online – Hard copy

***LATE / CHASING RESULTS***

# Stakeholders involved

Clozapine Coordinator	2
GPs (shared Care)	13
GP admin staff (x4 surgeries)	7
GPs (general care)	65+
Psychiatrists (public)	8
Psychiatrists (private)	7
Key workers	30
Support workers	18
Admin staff	6
Hostel staff of 3 hostels	9
Activity supervisors	4

Team Leader	2
Peer specialist	2
Pathology services x3	
1. Healthscope (x8)	9
2. IMVS (x4 plus doms)	6
3. Clinpath (x2 plus doms)	5
Community Pharmacies x 11	18
Hospital pharmacy FMC & Morier	4
CPMS Staff	4
Novartis staff (Drug rep & admin)	2

plus inpatient staff, other coordinators & staff across Adelaide metro, country and interstate particularly when transferring consumers

*\* Numbers are subject to variability...*

Over 220 people!

+ the 130 consumers

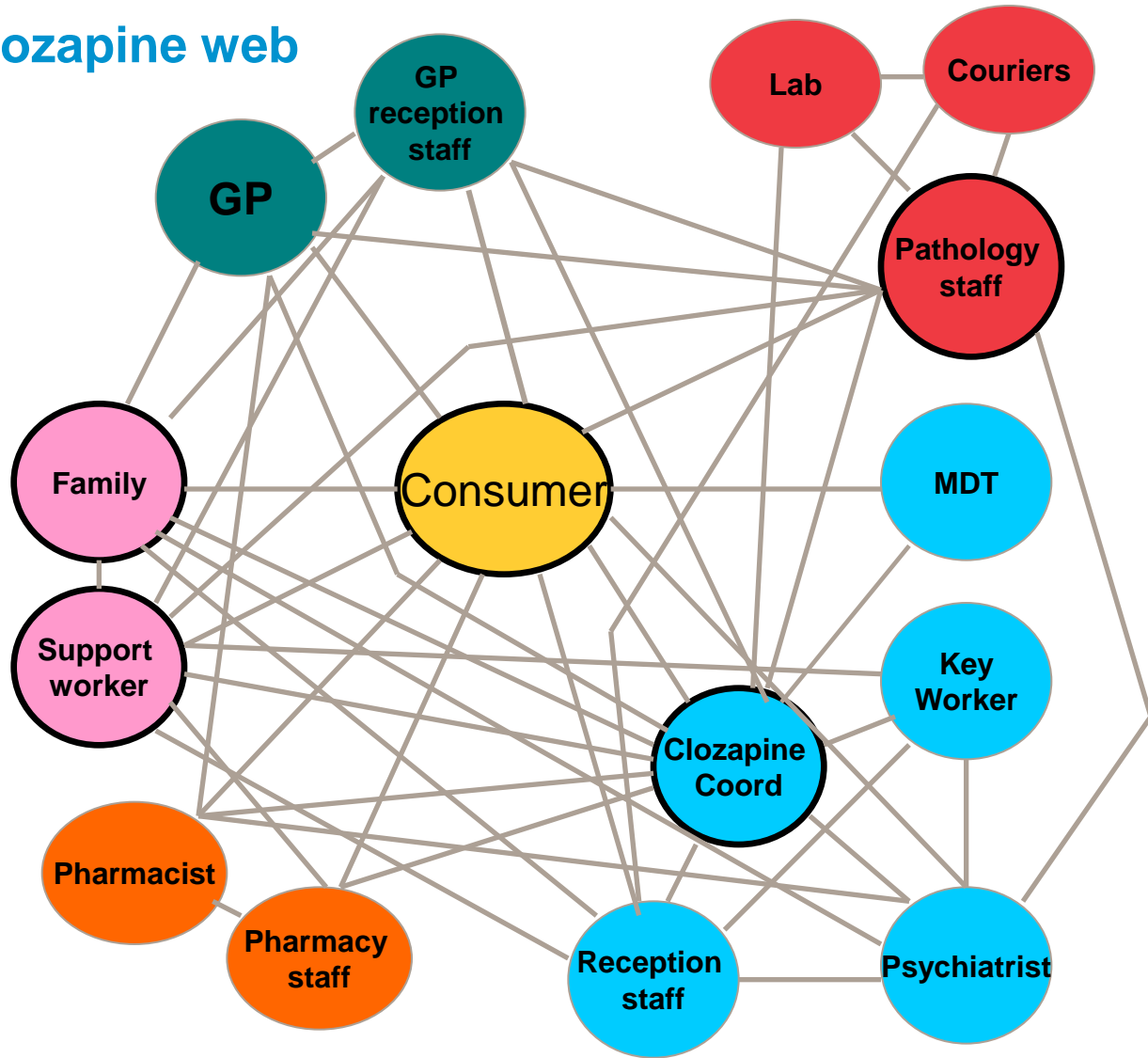


TGA

DASSA

DOH

# The Clozapine web



# Process Flow Chart





# Consumer feedback

Consumers want:

- Know when blood test is due
- No waiting
- Convenience
- As few blood tests as possible
- Want to know the result
- To remain well with as little contact with MHS as possible

# Cause and effect diagram

Communication

Consumer related

Organisational

Communication between inpatient & community

Consumers forgetting blood test

Consumers having unnecessary blood tests

Consumers not present for home visit  
What to do if consumer has not had blood test

Consumers not fasting when required

Lack of guidelines for relief staff

Inconsistent practice between doctors

Doctors leaving blood testing up to coordinator  
Many patients don't see Cancer Care Coordinator

Issues with start up procedure

Variation in blood testing

Cause

Difficulty keeping track of weekly monitoring

Discrepancies with directions on script

Action to take if consumer has no medication

Multiple copies of blood test being sent to clinic

Difficulties with forms

Results not consistently available on-line

Public holidays interfere with sequence

6 monthly blood testing done out of sequence

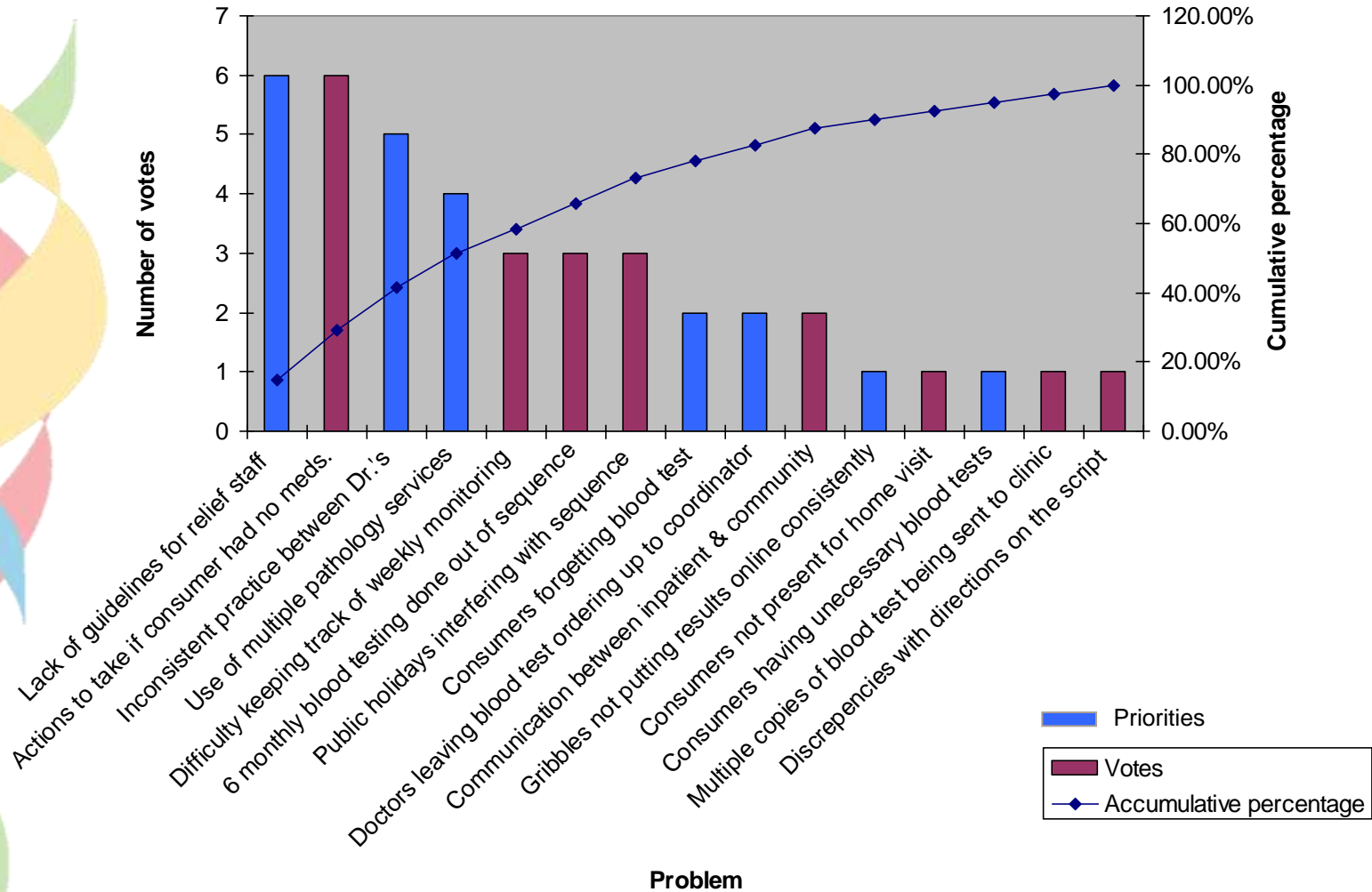
Use of multiple pathology services

Pharmacy

Pathology

# Evidence

Pareto chart Clozapine Blood testing issue





# Highlights

- **Lack of guidelines** for staff
- **Inconsistent practice** between doctors
- Use of **multiple pathology services**



## PDSA cycles

- > **PLAN** to test change
- > **DO** the test on a small scale
- > **STUDY** the data
- > **ACT**

# Staff education

- > Evaluation revealed:
  - Fear
  - Lack of knowledge
  - Busy with own workloads
- > Clinician training
  - Electronic training package
  - Reference sheets



# Reference Sheet: Clinicians

SMH Fact sheet - DRAFT

## CLOZAPINE Information for CLINICAL STAFF

Outlines for key workers in the community mental health setting with clients prescribed the highly specialised antipsychotic Clozapine. Blood monitoring and prescribing requirements must be adhered to – refer to drug company regulations.

### Weekly blood test:

#### 1. Full blood count (FBC): White Cell Count (WCC) & Neutrophil Count (NC)

- Monday or Tuesday if public holiday
- Weekly or monthly (every 4 weeks) depending on stage of treatment
- Be aware of when the blood test is due and where the client has to do
- M/S is preferable, alternatively Healthscope (prev Gobbies) or Clinpath

Within the 48 hour window post blood test

#### 2. The client attends a clinic appointment with the treating doctor and/or Clozapine Coordinator for:

- Assessment of physical state to check for signs of infection, cardiac symptoms (chest pain, shortness of breath) & metabolic syndrome. Significant changes are reported to the treating doctor and key worker for follow up by the client's GP as required.
- Clozapine side effects (constipation, hypersalivation, sedation)
- Any other health issues
- Mental health assessment
- Note: Smoking can significantly affect Clozapine levels. Stopping smoking can rapidly increase the serum level.

#### 3. In conjunction with the clinic appointment the blood results are reviewed by the

- treating doctor and the Clozapine coordinator.
- If they are within the 'Green range' a script is issued by the treating doctor for 1 week or 28 days depending on the client status.

WCC & NC	Range	Action
WCC > 3.5 x 10 <sup>9</sup> /l and NC > 2.0 x 10 <sup>9</sup> /l	Green	Continue with CLOZARIL Inform coordinator & psychiatrist
WCC 3.0 - 3.5 x 10 <sup>9</sup> /l and/or NC 1.5 - 2.0 x 10 <sup>9</sup> /l	Amber	Take weekly FBC until green
WCC < 3.0 x 10 <sup>9</sup> /l and/or NC < 1.5 x 10 <sup>9</sup> /l	Red	STOP immediately! Inform coordinator & psychiatrist

- 4. A completed blood count form (Form 5) must accompany the script and is forwarded to the pharmacist with the script or given to the client.

- 5. A blood pathology request form for the next test is issued to the client (Rule 3 exemption for FBC – the form can be used for 6 separate collections)

### Additional Monitoring Requirements:

1. CLOZAPINE LEVELS are done 3-6 monthly unless otherwise specified
  - Changing the Clozapine dose
  - Suspected non-compliance
  - Starting or stopping smoking
  - Deterioration in mental and/or physical state
  - Introduction or cessation of medications that may alter level such as antibiotics, anticonvulsants, etc.
2. SIX Monthly: Fasting bloods, liver function arranged by treating doctor/coordinator
3. TWELVE Monthly or as specified ECG and Echocardiogram

Assistance may be required to organise/attend ECHO appointment.



### Pharmacy:

Be aware of which pharmacy is dispensing and their role

Medication:  Webster  Bex  Other \_\_\_\_\_

### Support:

The support worker or carer's role in Clozapine is discussed and included in the Care Plan

Be aware of the Clozaril Patient Monitoring Service (CPMS) 1800 501 768 an excellent information service

### SIDE EFFECTS:

- Weight gain
- Metabolic syndrome / diabetes
- Hypersalivation – more often at night
- Neuritis
- Sedation
- Severe constipation
- Infections – neutropenia can cause severe infection
- Increased heart rate
- Myocardial infarction
- Obsessional traits

### SERIOUS / ADVERSE EFFECTS (MEDICAL EMERGENCY)

- Seizures
- Chest pain, increased pulse rate
- Myocarditis (inflammation of heart muscle) usually during start up phase
- Cardiomyopathy (a progressive weakening of the heart)
- Neutropenia – Low blood count can cause severe infection
- Agranulocytosis – Low blood count leading to overwhelming infection
- Death as a result of the above

### WHEN TO LIAISE with the Clozapine coordinator or treating doctor:

- Concerns regarding compliance
- Fever, rigors, temperature greater than 38°
- Chest pain, pale, sweaty symptoms
- Increased heart rate, marked changes to blood pressure
- Deterioration of mental state
- Queries about when the blood test is due
- Queries re clinic appointment
- Pharmacy arrangements and dose enquiries
- Active involvement in discharge planning
- Active involvement in initiation of Clozapine
- Shared care process with GP engagement and maintenance therapy
- Care plan and clinical review
- Transfer to another region

Concerns/abnormalities or queries contact  
the treating psychiatrist and Clozapine coordinator or  
CPMS staff

### Clozapine Contacts

Clozapine Coordinator: Michelle Bentley (Marion Clinic) 8275 8000

Grace Macdonald (Carman Clinic) 8291 1000

Consultant Psychiatrist: Dr James Lally (Carman Clinic) 8291 1000

Dr James Macdonald (Marion Clinic) 8275 8000

Dr Lynette Rose (Carman Clinic) 8291 1000

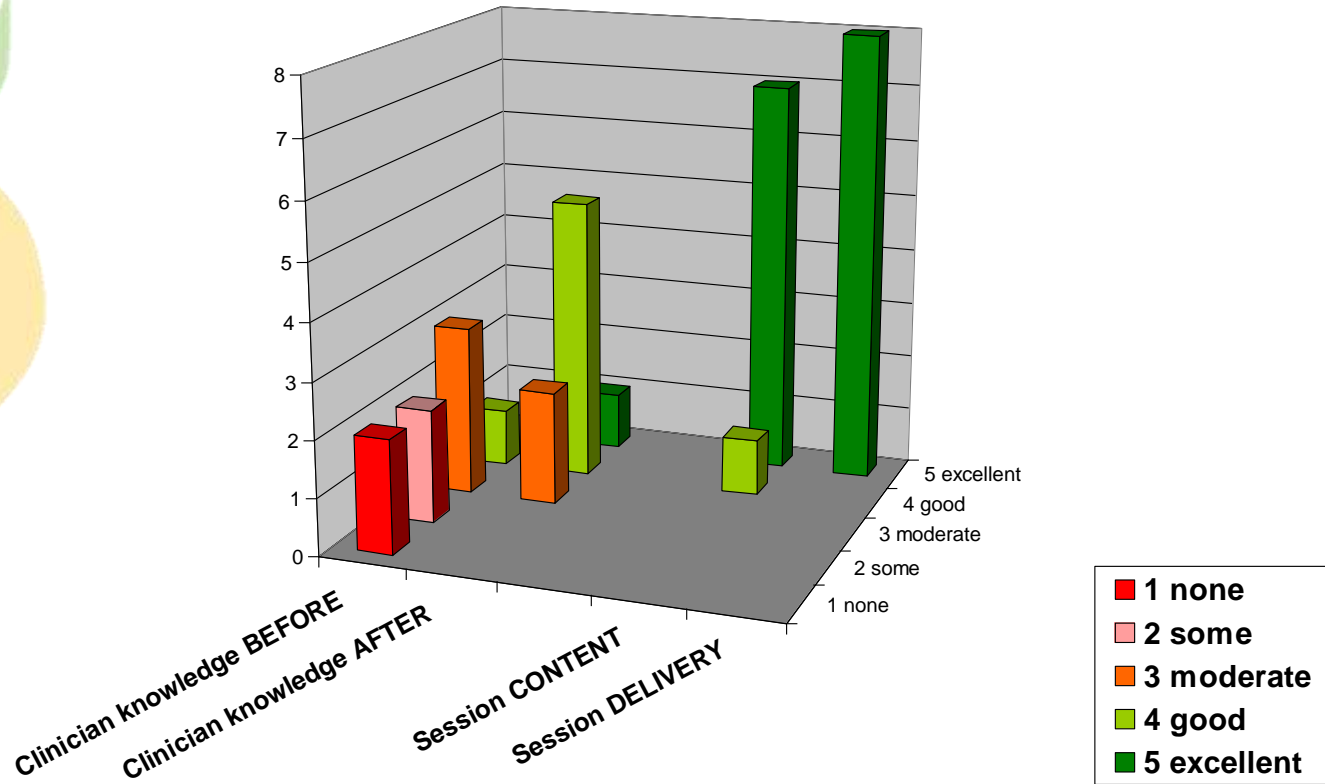
CPMS: Free call for monitoring enquiries 1800 501 768

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# Training evaluation

Clinician Training Evaluation 12 May 2010



# Reference Sheet: GPs

SMH Fact sheet DRAFT

## CLOZAPINE

### Prescribing & Monitoring Checklist for GPs

Checklist for safe monitoring of patient's receiving Clozapine via their GP

Monthly blood test:

1. Full blood count (White blood cell count & neutrophil count) prior to appointment

Within the 48 hour window post blood test:

2. Perform the monthly assessment:

- || Vital signs (check for signs of infection)
- || Cardiac symptoms (chest pain, shortness of breath)
- || Weight/BMI
- || Clozapine side effects (constipation, hypersalivation, sedation)
- || Any other health issues
- || Mental health assessment
- || Note: Smoking can significantly affect Clozapine levels

3. Review the blood results:

WCC & NC	Range	Action
WCC >3.5 x 10 <sup>9</sup> /L and NC >2.0 x 10 <sup>9</sup> /L	Green	Continue with CLOZARIL
WCC 3.0-3.5 x 10 <sup>9</sup> /L and/or NC 1.5-2.0 x 10 <sup>9</sup> /L	Amber	Inform coordinator & psychiatrist Twice weekly CBE until green
WCC <3.0 x 10 <sup>9</sup> /L and/or NC <1.5 x 10 <sup>9</sup> /L	Red	STOP immediately! Inform coordinator & psychiatrist

- || [if the blood results are within the "green range"
4. || Write script for 28 days complete with eligibility stamp
  5. || Complete the blood count form (Form 5) and forward to the pharmacist with the script or give to the patient
  6. || Complete the blood pathology request form for the next test (Rule 3 exemption is acceptable for FBC)

Additional Monitoring Requirements:

1. SIX Monthly: (metabolic syndrome screening and protocol requirements)
  - || Fasting blood glucose, cholesterol & triglycerides
  - || Liver function (EUC)
  - || Troponin T & CKMB pm
  - || Clozapine level +/- other drug levels as appropriate
2. TWELVE Monthly or as specified
  - || ECG and Echocardiogram

**IMPORTANT:** Concerns/abnormalities or queries contact the psychiatrist, Clozapine coordinator or Clozaril Patient Monitoring Service (CPMS)

#### Clozapine Contacts

Clozapine Coordinator: Michele Bentley (Marion Clinic) 8375 6000  
Grace Macdonald (Carramar Clinic) 8291 1600  
Consultant Psychiatrist: Dr Jamee Lally (Carramar Clinic) 8291 1600  
Dr James McLachlan (Marion Clinic) 8375 6000  
Dr Lynette Rose (Carramar Clinic) 8291 1600  
CPMS: Free call for monitoring enquiries 1800 501 768



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- > One page
- > "60 second rule"
- > Checklist
- > Protocol
- > Contacts

# Reference Sheet:

## Supported Residential Facility Staff

SMH Fact sheet DRAFT

### CLOZAPINE

#### Guidelines for SRF STAFF

Outlines for staff of Supported Residential Facilities  
Regarding clients prescribed the highly specialised antipsychotic Clozapine

- Weekly blood test. (Clozapine can affect the blood cells)
1. Full blood count (FBE): White Cell Count (WCC) & Neutrophil Count (NC) is completed on **Monday or Tuesday** if public holiday
    - **Weekly** or monthly (every 4 weeks) depending on stage of treatment
    - Often the blood test is set up as a home visit by the pathology service
    - MAB (SouthPath) is preferred, alternatively Clinpath is an option

- Within 48 hours after the blood test:
2. The client attends a clinic appointment with the treating doctor and/or Clozapine Coordinator for:
    - Assessment of physical state to check for signs of infection, cardiac symptoms (chest pain, shortness of breath), Weight, blood sugar levels are monitored. Significant changes are reported to the treating doctor and key worker for follow up by the client's GP as required.
    - Clozapine side effects (constipation, hypersalivation, sedation)
    - Any other health issues
    - Mental health is assessed
    - Note Smoking can **significantly** affect Clozapine levels  
**Stopping smoking can increase the serum level**

The doctor and Clozapine coordinator review the blood results before a script is provided.

**Green** - A green result is classified as normal

**Amber** - If Amber the blood test is repeated twice a week

**Red** - If Red Clozapine is stopped

4. A completed blood count form (Form 5) must accompany the script and is forwarded to the pharmacist with the script by the Clozapine coordinator or given to the client to take to the pharmacy themselves
5. A blood pathology request form for the next test is issued to the client (Rule 3 exemption for FBE – the form can be used for 6 separate collections)

Additional Monitoring Requirements:

1. CLOZAPINE LEVELS are done 3-4 monthly or more frequently if
  - Changing the Clozapine dose
  - Suspected non compliance
  - Starting or stopping smoking
  - Deterioration in mental and/or physical state
  - Introduction or cessation of medications that may affect the Clozapine blood level such as antibiotics, antifungals, etc
2. SIX Monthly: Fasting bloods, liver function arranged by treating doctor/psychiatrist. The coordinator will inform the client, SRF staff and pathology service staff
3. TWELVE Monthly or as specified RCG and Echocardiogram



Pharmacy:

Medication can be delivered to the relevant SRF.  
Any problems with packaging must be reported to the mental health service and be rectified by the pharmacy.  
Medication changes will be reported to the client, pharmacy and SRF staff.

Support:

The support worker or carer's role in Clozapine is discussed and included in the Care Plan

SIDE EFFECTS:

- Weight gain
- Metabolic syndrome / diabetes
- Increased salivation – more often at night
- Nausea
- Sedation
- Severe constipation
- Infections – neutropenia can cause severe infection
- Increased heart rate
- Myoclonic jerks
- Obsessional traits

**SERIOUS / ADVERSE EFFECTS: (MEDICAL EMERGENCY)**

- Seizures
- Chest pain, increased pulse rate
- Myocarditis (inflammation of heart muscle) usually during start up phase
- Cardiomyopathy (a progressive weakening of the heart)
- Neutropenia – Low blood count can cause severe infection
- Agranulocytosis – Low blood count leading to overwhelming infection
- Death as a result of the above

WHEN TO LIAISE with the Clozapine coordinator at treating doctor, GP, Antipsychotic or hospital emergency department:

- Concerns regarding compliance
- Refusal to take Clozapine **MUST BE REPORTED** to the mental health service and must not be restarted without medical consent
- Fever, rigors, temperature greater than 38° that may indicate infection
- Chest pain, pain, increased heart rate and increased sweating
- Deterioration of mental state
- Queries about when the blood test is due
- Queries regarding next clinic appointment
- Pharmacy arrangements and dose enquiries
- Shared care with GP
- If the client has been sent to an emergency centre or admitted to hospital for physical or mental health problems

Concerns/abnormalities or queries contact  
the Clozapine coordinator or treating psychiatrist  
ACIS 13 14 56 (emergency after hours)

Clozapine Contacts

Clozapine Coordinator: Andrew Dentley (Marion Clinic) 8275 5000  
Gina Macdonald (Canamar CBHQ) 8281 1000  
Consultant Psychiatrist: Dr Janice Lally (Canamar Clinic) 8281 1000  
or Janice Macdonald (Marion Clinic) 8275 5000  
or Lynette How (Canamar Clinic) 8281 1000  
CRME: Free call for monitoring enquiries 1800 561 768



# Reference Sheet: Pathology Staff

SMH Fact sheet DRAFT

## CLOZAPINE Guidelines for PATHOLOGY STAFF

Guidelines for pathology staff involved in serigentine tablets prescribed Clozapine a specialised antipsychotic medication requiring ongoing monitoring. Clients are commenced on Clozapine either in hospital or as a day patient and during the 18 week start up period are required to have a weekly FBE. Once established on maintenance therapy the FBE is performed 4 weekly. The service and centre is chosen collaboratively with the client.

Weekly blood test: (Clozapine can affect the blood cells)

1. Full blood count (FBE) White Cell Count (WCC) & Neutrophil Count (NC) is completed on Monday or Tuesday if public holiday
  - Often the blood test is set up as a home visit with the aim to eventually attend a centre independently to encourage self responsibility.

Within 48 hours after the blood test:

2. The client attends a clinic appointment with the treating doctor and or Clozapine Coordinator for:

- Assessment of physical state to check for signs of infection, cardiac symptoms (chest pain, shortness of breath)
- Clozapine side effects (constipation, hypersalivation, sedation)
- Mental health assessment
- Note: Smoking can significantly affect Clozapine levels. Stopping smoking can increase the serum level.

The doctor and Clozapine coordinator review the blood results before a script is provided

**Green** A blood count within the recommended range

**Amber** if blood count moderately low FBE is repeated twice a week

**Red** if the blood count is dangerously low Clozapine is stopped

4. A script for Clozapine will only be issued and dispensed by the pharmacy if the blood result is satisfactory
5. A pathology request form (Rule 3 exemption) for the next test is issued to the client

Additional Monitoring Requirements:

1. CLOZAPINE LEVELS are ordered 3-6 monthly or more frequently if
  - Changing the Clozapine dose
  - Suspected non compliance
  - Starting or stopping smoking
  - Deterioration in mental and/or physical state
  - Introduction or cessation of medications that may alter level such as antibiotics, anticonvulsants, etc.
2. SIX Monthly: Fasting bloods, liver function ordered by treating doctor. The coordinator will inform the client, SRP staff and pathology service staff
3. TWELVE Monthly or as specified Tropenin T, ECG and Echocardiogram



The role of the pathology staff is a vital link in the monitoring process. Mental health staff value the service and feedback of the pathology staff and appreciate being notified of any concerns.

Attendance of the serigentine appointment:

The support worker or carer may be involved with attendance of appointments.

RISK:

Mental health staff will inform pathology staff of relevant risks regarding the client.

SIDE EFFECTS: (Not unusual)

- Weight gain
- Metabolic syndrome / diabetes
- Hyper salivation - more often at night
- Nausea
- Sedation
- Severe constipation
- Infections - neutropenia can cause severe infection
- Increased heart rate
- Myoclonic jerks
- Occasional falls

**SERIOUS / ADVERSE EFFECTS: (MEDICAL EMERGENCY)**

- Seizures
- Chest pain, increased pulse rate
- Myocarditis (inflammation of heart muscle) usually during start up phase
- Cardiomyopathy (a progressive weakening of the heart)
- Neutropenia - Low blood count can cause severe infection
- Agranulocytosis - Low blood count leading to overwhelming infection
- Death as a result of the above

**WHEN TO LIAISE with the Clozapine coordinator or mental health service:**

- Concern regarding the safety of pathology staff
- Concern regarding safety of the client
- Concerns regarding compliance
- Fever, rigors, temperature greater than 38° that may indicate infection and must be reported immediately
- Chest pain, pale, increased heart rate and increased sweating may indicate a medical emergency
- Deterioration of mental state
- Queries about the blood test due date
- Queries re additional blood tests
- To report if fasting bloods not done due to client not fasting

Concerns/abnormalities or queries contact the Clozapine coordinator or ACIS 13 14 65 (Emergency after hours)

Clozapine Contacts

Clozapine Coordinators: Michele Bentley (Marion Rd Clinic) 8375 6000  
Grace Macdonald (Carramar Clinic) 8291 1600  
CRMS: Free call for monitoring enquiries 1800 501 768

Consulted Psychiatrists: Dr James Lilly (Carramar Clinic) 8291 1600  
Dr James Macdonald (Marion CRMS) 8375 6000  
Dr Lyette Rose (Carramar Clinic) 8291 1600



# Reference Sheet: Alert Process Posters

## CLOZAPINE ALERT Sheet 1

Clozapine is a highly specialised **section 100 drug** that **requires monitoring** as per the Clozaril Patient Monitoring System (CPMS) protocol

Clozapine Clinics are coordinated by regional Clozapine Coordinators, either hospital based or community based.

Clozapine is prescribed by registered Clozapine doctors  
Clozapine is dispensed by registered Clozapine pharmacists

Clozapine can cause **life threatening blood and cardiac disorders**.

(see "Alert sheet 2" and requires monitoring (as per the protocol):

- Blood tests: **Full Blood Examination** weekly or monthly depending on stage of treatment and consumer's state of health.
- **Health checks:** weekly or monthly by a Registered Nurse or Medical Officer.
- **Cardiac monitoring:** ECHO/ECG & Troponin 1 as per protocol require-

### Blood Testing

Blood Ranges	White Blood Cell Count	Neutrophil Count
Green	Above $3.5 \times 10^9/L$	Above $2.0 \times 10^9/L$
Amber	Between $3.0 \times 10^9/L$ and $3.5 \times 10^9/L$	Between $1.5 \times 10^9/L$ and $2.0 \times 10^9/L$
Red	Below $3.0 \times 10^9/L$	Below $1.5 \times 10^9/L$

### Reviewing blood results: Green, Amber or Red?

If results are in the **GREEN** Range:

- Continue Clozapine treatment

If results are in the **AMBER** range:

- Consumers may be maintained on Clozapine, but clinical and haematology reviews should be increased to **twice weekly**. Continue twice weekly reviews until WBC and/or neutrophils increase beyond  $3.5 \times 10^9/L$  and  $2.0 \times 10^9/L$ , respectively.
- Once this has occurred return to weekly or monthly monitoring depending on when the patient was commenced on treatment.

**No more than 3 – 4 days of medication should be dispensed when patients have blood results in the amber range.**

If the results are in the **RED** range:

- **STOP CLOZAPINE IMMEDIATELY** & discuss with prescribing consultant.
- Repeat Full Blood Examination within 24 hours

Page 1 of a 2-page Clozapine alert initiative of Southern Mental Health Clozapine Coordinators  
Adaire 8384 9599 Carramar 8291 1600 Marion 8375 6000  
Printed October 2010

## CLOZAPINE ALERT Sheet 2

**\*\* 72hrs without medication = treatment interruption \*\***  
**To recommence CLOZAPINE**

**Consult** the prescribing doctor Clozapine Coordinator  
Adaire 8383 9599 Carramar 8291 1600 Marion 8375 6000  
Clozaril Patient Monitoring System 1800 501 768

### BE AWARE OF

#### MAJOR COMPLICATIONS

- MYOCARDITIS / AGRANULOCYTOSIS**
- Reduced neutrophil count with resultant in **NEUTROPENIA**
- Fever, "flu-like" symptoms
- Extreme lethargy / exhaustion
- Irregular / racing pulse rate.
- Difficulty breathing
- Chronic heart failure in severe cases
- CARDIOMYOPATHY**
- Fever, weakness
- Extreme difficulty breathing (constant or intermittent)
- Symptoms of chronic heart failure

### SIDE EFFECTS

- Mild light-headedness
- Mild dizziness
- Postural hypotension
- Severe constipation
- Nausea or vomiting
- Weight gain and associated risks
- Increased salivation
- Sedation
- Increase in OCD

**\*\* Drug induced agranulocytosis should be managed as a MEDICAL EMERGENCY not a mental health issue \*\***

### NEUROLEPTIC MALIGNANT SYNDROME

Elevated temp, sweating, tachycardia, muscle stiffness, fluctuating BP

### SEIZURES DIABETES JAUNDICE

### PERSISTENT PAINFUL ERECTION

### CLINIC HEALTH CHECKS

can be carried out by a Registered Nurse or Medical Officer

- Δ check mouth and throat for signs of infection Look for ulceration
- Δ temperature, pulse, blood pressure >38°C, >100bpm, BP postural drop
- Δ weight/BMI
- Δ mental health assessment Variation from usual presentation
- Δ other health issues including bowel function Severe constipation
- Δ review the blood results
- Δ side effects as listed above
- Δ blood sugar levels and additional blood testing as per CPMS protocol

Page 2 of a 2-page Clozapine alert initiative of Southern Mental Health Clozapine Coordinators  
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Printed October 2010



# CHANGE:

## The key learning points

- > Identify problem
- > Collect data and evidence
- > Look to the edges for context
- > Seek engagement
- > Sell your idea – develop the business case
- > Focus and visualise
- > Courage to challenge
- > Take considered risks
- > ***Let go of old ways***
- > Evaluate



# What's been achieved?

- > The region has completed:
  - Pathways document
  - Clozapine commencement policy & checklist
  - Heat policy
  - Universal monitoring chart
- > Inner South has completed:
  - Site specific protocol reference sheets
  - Electronic education package
  - Alert reference sheets in draft
  - CBIS and case notes contain an “alert”
  - A health check documentation process



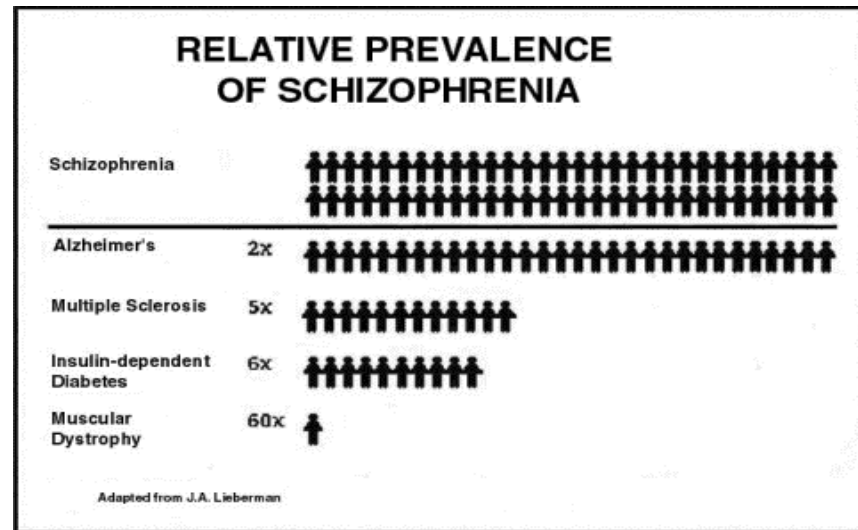
# Looking to the future

- > Nurse-led clinics
  - Increasing numbers of consumers
  - Excess demand on medical time
  - Protocol states a nurse can review the consumer
  - Further review of clinics:
    - Assessment processes
    - Use of clinical pathways
    - Documentation
    - Resources
- > Scope for further development
  - Broadening of role and recognition
  - Reference sheets
    - Consumer info
    - Treatment interruption
    - Inpatient staff

# Southern Mental Health



- > Population 440,000
- > 4,400 people with schizophrenia (1%)
- > 1,400 treatment resistant (1/3)
- > 230+ clients on Clozapine



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**Government  
of South Australia**

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SA Health

*Thank you, Grace & Michele*



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