

## CLOZAPINE INFORMATION for NHS LANARKSHIRE ON-CALL PHARMACISTS AND PRESCRIBERS



<b>TARGET AUDIENCE</b>	On-call (Emergency Duty) Pharmacists and Resident Doctors working out of hours
<b>PATIENT GROUP</b>	Any patients prescribed clozapine

### Clinical Guidelines Summary

- Clozapine is the gold standard antipsychotic for treatment-resistant schizophrenia. It is also licensed in schizophrenia for those who are intolerant to other antipsychotics and for psychosis in Parkinson's disease.
- This document is to provide guidance to on-call (emergency duty) pharmacists and resident doctors outwith mental health services to support the management and prescribing of clozapine out-of-hours.

### Neutropenia and mandatory FBC monitoring

Clozapine can cause neutropenia and agranulocytosis. Its use is subject to mandatory monitoring of white blood cells and absolute neutrophil counts and all patients must be registered with a clozapine patient monitoring service. Clozapine can only be dispensed if there is a valid blood result.

### Frequency of bloods

For weekly monitored patients, a result is valid for dispensing from the analysis date of the blood result until 3 days beyond the standard monitoring frequency. For fortnightly monitored patients, the result is valid from analysis date until 7 days beyond the standard monitoring frequency. For 4-weekly monitored patients, the result is valid from analysis date until 14 days beyond the standard monitoring frequency.

Duration of clozapine treatment	Monitoring frequency	Duration of validity
First 18 weeks	Weekly	7 days (+ 3 days)
18-52 weeks	Fortnightly	14 days (+ 7 days)
> 52 weeks	Monthly	28 days (+ 14 days)

If there is any evidence of infection, particularly flu-like symptoms, sore throat or fever that may be indicative of neutropenia, a full blood count should be arranged urgently and the on-call psychiatrist contacted if necessary.

### Clozapine Traffic Light Warning System for neutropenia

Blood counts (x 10 <sup>9</sup> /L)	Classification	Action
<b>WBC ≥ 3.5*</b> <i>and</i> <b>Neutrophils ≥ 2.0*</b>	<b>Green</b>	Continue clozapine treatment
<b>WBC ≥ 3.0 and &lt; 3.5 *</b> <i>and/or</i> <b>Neutrophils ≥ 1.5 and &lt; 2.0 *</b>	<b>Amber</b>	Treatment can be continued Full blood count to be done twice weekly until back to green
<b>WBC &lt; 3.0 *</b> <i>and/or</i> <b>Neutrophils &lt; 1.5 *</b>	<b>Red</b>	STOP clozapine treatment Full blood count to be done daily until back to green On-call psychiatry should be contacted
<b>Neutrophil count &lt;0.5</b>	<b>Red</b>	As above, plus haematology should be contacted
Eosinophils > 3.0	Out of range	Continuation not usually recommended On call psychiatry should be contacted
Platelets < 50	Out of range	Continuation not usually recommended On call psychiatry should be contacted

\* The cut-off values of the 'traffic light' system for WBC/ Neutrophil parameters are lower in patients with a diagnosis of Benign Ethnic Neutropenia (BEN)

Lead Author	Lorna Templeton, Lead Pharmacist	Date approved	18/3/26
Version	V2	Review Date	18/3/29

### **FBC monitoring for clozapine patients in NHS Lanarkshire**

All patients registered with a clozapine patient monitoring service have their regular FBC monitoring samples sent to local haematology laboratories with results being available via the Clinical Portal (regional GGC portal for patients in Cambuslang/Rutherglen/ Northern Corridor areas) or LIMS. Results are then transferred via an e-link to the clozapine monitoring service or manually inputted into the patients' clozapine monitoring service record.

### **Medicines reconciliation at point of admission**

All patients resident in NHS Lanarkshire and registered with UHM pharmacy as their dispensing pharmacy should have a note on their emergency care summary that they are prescribed clozapine, e.g:

Not from own practice	Clozapine 25mg tablets	1 tablet	NOT TO BE PRESCRIBED BY GP - SECONDARY CARE TO CONTACT MENTAL HEALTH TEAM TO CONFIRM DOSES. SUPPLIED ELSEWHERE - NOT TO BE PRESCRIBED BY GP OR DISPENSED BY COMMUNITY PHARMACY
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In addition, all clozapine patients should also have a clinical note on their HEPMA records, e.g:

Title	Clozapine	Created	21-Jan-2026 11:07
Type	Clinical Information	Author	Ms Lorna Templeton
Clozapine monitoring service no. 502416			

These prompts are both aimed to support medicines reconciliation at the point of admission and minimise the risk of clozapine inadvertently not being prescribed. NB: patients resident in Cambuslang/ Rutherglen area of Lanarkshire are registered as NHS GGC patients and will not have a HEPMA note in NHS Lanarkshire's HEPMA system.

The currently prescribed dose of clozapine can be confirmed via access of the patients dispensing record within CMM (access for on-call pharmacists only).

### **Supply of clozapine**

Clozapine is exclusively managed by mental health services within NHS Lanarkshire and is supplied via secondary care. The main dispensing site for clozapine supply to outpatients in NHS Lanarkshire is **University Hospital Monklands**. University Hospital Hairmyres and University Hospital Wishaw are satellite dispensing sites for supply of clozapine to their respective inpatients

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## Other clinical considerations

### Constipation

Constipation is a common adverse effect of clozapine. Severe complications associated with clozapine-induced constipation include intestinal obstruction, faecal impaction and paralytic ileus, and the risk of developing complications is highest in the first few months of treatment. Some individuals presenting with apparent 'diarrhoea' may in fact be exhibiting overflow. Patients on clozapine complaining of constipation should be assessed and treated. If symptoms suggestive of obstruction emerge, clozapine should be stopped. Mortality rates associated with complications from clozapine-induced constipation are higher than the risk of fatal agranulocytosis.

For further information, refer to;

[NHS Lanarkshire- Clozapine induced gastrointestinal hypomotility guidance](#)

### Myocarditis

Clozapine is associated with an increased risk of myocarditis which has, in rare cases, been fatal. The increased risk of myocarditis is greatest in the first 2 months of treatment. Fatal cases of cardiomyopathy have also been rarely reported. Myocarditis or cardiomyopathy should be suspected in patients who experience persistent tachycardia at rest, especially in the first 2 months of treatment, and/or palpitations, arrhythmias, chest pain and other signs and symptoms of heart failure (e.g. unexplained fatigue, dyspnoea, tachypnoea) or symptoms that mimic myocardial infarction. In these circumstances, clozapine should routinely be withheld and cardiology advice should be sought urgently.

### Signs and symptoms of increased clozapine plasma levels/ clozapine toxicity

Dose-related side effects of clozapine include sudden dizziness, hypotension, sedation, constipation, hypersalivation, myoclonus and seizures. Dose reduction may be required to manage these symptoms and on-call psychiatry should be contacted.

### Treatment breaks

If clozapine is missed for more than 48 hours, it should be re-titrated on advice from on-call psychiatry usually starting at 12.5mg once or twice daily. Serious adverse effects including tachycardia, postural hypotension, myocarditis and seizures can occur if a full treatment dose is administered after a break in treatment. If clozapine treatment is missed for more than 96 hours, re-titration plus an increase in full blood count frequency is required. A standard clozapine titration regime is available as a prescribing protocol on HEPMA.

### Interactions

- Clozapine is contraindicated with any medicine known to cause myelosuppression
- Caution is advised with concurrent use of any QTc prolonging medicines
- Antihypertensives and clozapine can cause additional hypotensive effects
- CYP1A2 and 3A4 inhibitors may increase clozapine levels
- CYP1A2 and 3A4 inducers may decrease clozapine levels

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### **Smoking**

Smoking induces the metabolism of clozapine, therefore, stopping smoking during an inpatient stay can increase clozapine plasma levels and dose-related adverse effects. A dose reduction is often required on admission to hospital. The interaction is related to the hydrocarbons in smoke, therefore the use of nicotine replacement therapy (NRT) does not prevent the rise in plasma levels.

N.B. Measurement of clozapine plasma levels are offered by an external laboratory (currently Magna Labs [www.magnalabs.co.uk](http://www.magnalabs.co.uk)); results can take between 2-4 days to be obtained, they are therefore not urgently required out of hours.

### **Patients with swallowing difficulties or enteral feeding tubes**

Clozapine tablets can be crushed and dispersed in water in the event that the solid oral dosage form is unsuitable. Supply of the liquid formulation can be organised during working hours only.

### **Managing red results**

In the event of a neutropenic episode ('red' result), clozapine must be stopped and daily full blood counts done until neutropenia has resolved. If there are signs and symptoms suggestive of infection or if neutrophils  $< 0.5 \times 10^9/L$ , haematology should be involved urgently. It is recommended that additional antipsychotics are avoided during episodes of neutropenia to minimise risk of delayed recovery. Benzodiazepines would be the treatment of choice for acute mental health disturbance in the event of a red result. On-call psychiatry should be contacted for advice.

### **Surgery**

If possible, clozapine should be avoided for 12 hours prior to general anaesthesia. The next due dose may have to be postponed following surgery if there are issues with low blood pressure or excessive sedation.

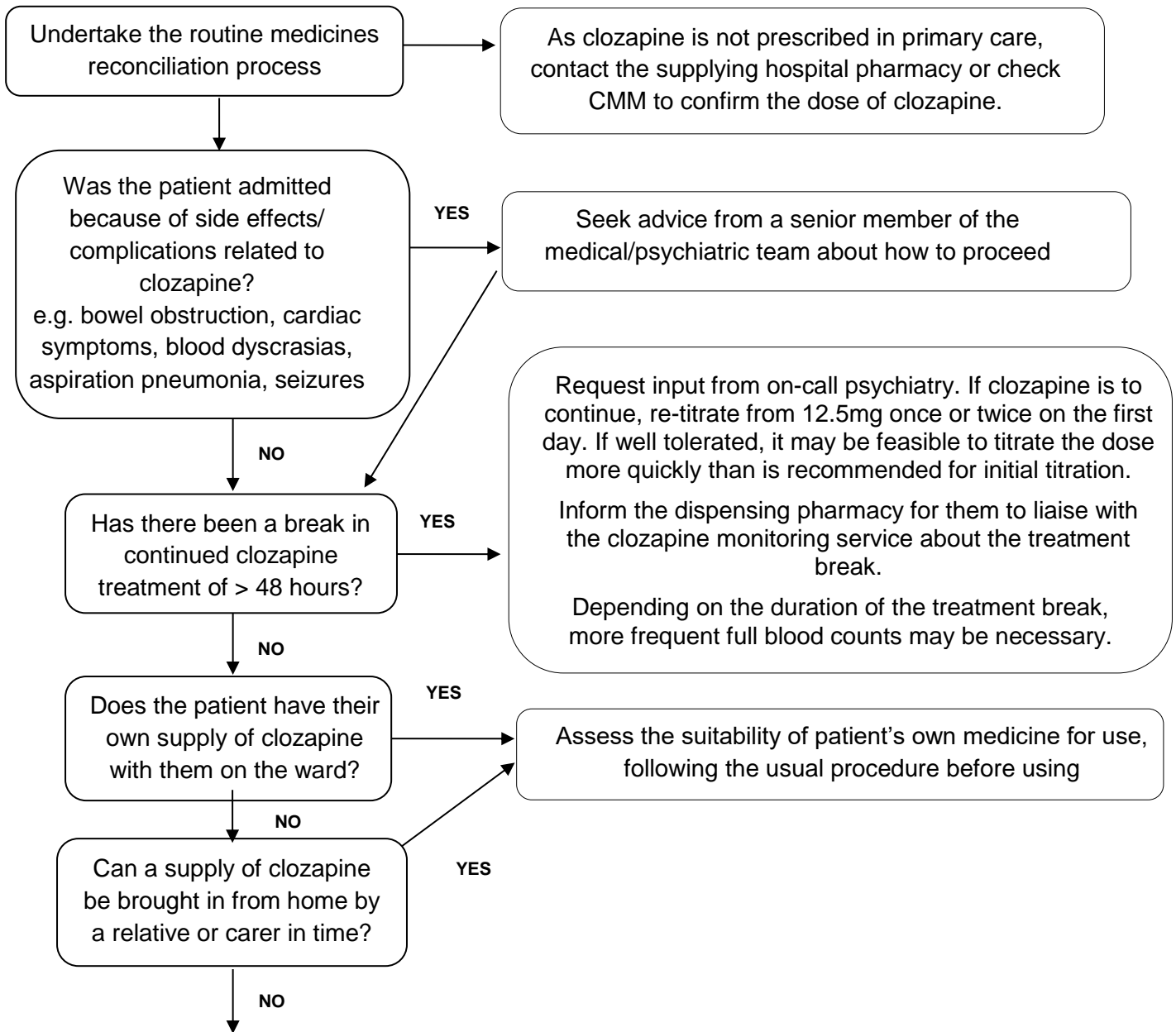
**In the event of a clozapine clinical query/ supply issue out of hours, contact the specialist MH pharmacy team on the next available working day for advice on ongoing management or to pass on relevant information.**

**Contact details for MHL D pharmacy team**

<http://firstport2/staff-support/pharmacy-mental-health>

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**How to maintain supplies of clozapine for patients during hospital admission**



The main dispensing site for clozapine supply to outpatients in NHS Lanarkshire is UHM. UHH and UHW are satellite dispensing sites for supply of clozapine to their respective inpatients.

**Patient must have a valid full blood count within specified parameters before a supply can be made. Remember: if you are dispensing clozapine, it is your responsibility to check bloods are in range (see table on page 2).**

*Thanks to Sussex Partnership NHS Foundation Trust for giving permission to adapt their flowchart from 'Guidelines for staff managing clozapine for patients admitted to Acute and Community Hospitals.'*

<b>Lead Author</b>	Lorna Templeton, Lead Pharmacist	<b>Date approved</b>	18/3/26
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### Contact Details

Most patients in NHS Lanarkshire are registered with the Clozaril ®Patient Monitoring Service (CPMS) with the exception of a small number of patients who are registered with Denzapine® Monitoring Service (DMS) (for liquid preparation).

Clozaril® Patient Monitoring Service (CPMS)	0845 769 8269 <a href="https://www.clozaril.co.uk">https://www.clozaril.co.uk</a>
Denzapine® Monitoring Service (DMS)	0333 200 4141 <a href="https://www.denzapine.co.uk">https://www.denzapine.co.uk</a>

### Further information on clozapine

- Pharmacy- Mental Health Firstport page (clozapine subfolder)  
<http://firstport2/staff-support/pharmacy-mental-health>
- NHS Lanarkshire Clozapine Standards  
<https://www.rightdecisions.scot.nhs.uk/m/kt1byjt4/clozapine-standards-for-nhsl-mhld-sep-2023.pdf>
- NHS Lanarkshire Clozapine induced gastrointestinal hypomotility guidance  
<https://rightdecisions.scot.nhs.uk/m/2028/advice-for-the-management-of-clozapine-induced-gastrointestinal-hypomotility-cigh-apr-22-v1.pdf>
- The Maudsley Prescribing Guidelines in Psychiatry (15<sup>th</sup> edition)  
<https://onlinelibrary.wiley.com/doi/book/10.1002/9781119870203>
- Choice and Medication  
<https://www.choiceandmedication.org/nhs24/>
- SPC for Clozaril tablets  
<https://www.medicines.org.uk/emc/product/4411/smpc>
- SPC for Denzapine oral solution  
<https://www.medicines.org.uk/emc/product/6121/smpc>
- Specialist Pharmacy Service. Clinical considerations for patients prescribed clozapine. June 24  
<https://www.sps.nhs.uk/articles/clinical-considerations-for-patients-prescribed-clozapine/>

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## Appendices

### 1. Governance information for Guidance document

<b>Lead Author(s):</b>	Lorna Templeton
<b>Endorsing Body:</b>	Area Drug & Therapeutics Committee
<b>Version Number:</b>	V2
<b>Approval date</b>	18/3/26
<b>Review Date:</b>	18/3/29
<b>Responsible Person (if different from lead author)</b>	

<b>CONSULTATION AND DISTRIBUTION RECORD</b>	
<b>Contributing Author / Authors</b>	Lorna Templeton MHLDA pharmacy team
<b>Consultation Process / Stakeholders:</b>	MHLDA Drug & Therapeutics Committee
<b>Distribution</b>	RDS Clinical Guidelines site and app

<b>CHANGE RECORD</b>			
<b>Date</b>	<b>Lead Author</b>	<b>Change</b>	<b>Version</b>
Jan26	L Templeton	Updated to standard template following request to remove clinical guidance from Firstport. Long-standing guide to support on-call pharmacists and resident doctors with clozapine management out of hours	1

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<b>Version</b>	V2	<b>Review Date</b>	18/3/29