

SHARED CARE PRESCRIBING GUIDELINE

Continuation of Mycophenolate Mofetil for the prevention of organ rejection in ADULT

liver transplant recipients in existing patients only (i.e. those already being prescribed this drug in primary care)

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| **SHARED CARE PROCESS FLOWCHART** |
| **Specialist clinician completes Shared Care Request Letter (Appendix 1) and sends to patient’s GP via email.****GP considers shared care request, taking into account the following:*** Is the patient’s condition predictable or stable?
* Whether they have the relevant knowledge, skills and access to equipment to allow them to monitor treatment as indicated in this shared care prescribing guideline?
* Whether they have been provided with relevant clinical details including monitoring data?

**If NO to any of these questions, GP should contact the requesting consultant or the local primary care Medicines Optimisation Team within 2 weeks of receipt to discuss**14**If YES to all the above, and after reading this shared care guideline then it is appropriate for GP to accept prescribing responsibility**Issues resolved / details clarified**Complete Shared Care Refusal Letter (Appendix 3) and email back to the requesting clinician****Complete Shared Care Agreement Letter (Appendix 2) and email back to the requesting clinician within 2 weeks of receipt****NOTES**There may be implications for the patient where invitation to share care is declined. For example, the patient may need to be changed to an alternative treatment regimen. It would not normally be expected that shared care prescribing would be declined on the basis of cost.Sharing of care assumes communication between the specialist, GP and patient. The intention to share care should be explained to the patient by the doctor initiating treatment. **It is important that patients are consulted about treatment and are in agreement with it**. Prescribing should follow requirements in the [South East London Interface Prescribing Policy](https://www.selondonics.org/selimoc-policies). **The doctor who prescribes the medication legally assumes clinical responsibility for the drug and the consequences of its use. The patient’s best interests are always paramount.**If the GP is not confident to undertake these roles, then he or she is under no obligation to do so. In such an event, the total clinical responsibility for the patient for the diagnosed condition remains with the specialist. If a specialist asks the GP to prescribe this drug, the GP should reply to this request as soon as practicable. |

1. **Areas of responsibility**

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| **Consultant / Specialist team responsibilities** |
| * Ensuring patient fits criteria for use of this drug (e.g. no contraindications, cautions, fits local agreement for use of the drug)
* Baseline monitoring
	+ Liver function tests including aspartate transaminase (AST), alkaline phosphatase (ALP), gamma glutamyl transferase (GGT), bilirubin and albumin
	+ Urea and electrolytes including magnesium
	+ Full Blood Count
	+ Clotting – INR
	+ Mycophenolate level
* Discuss treatment with patient and ensure they have a clear understanding of it. Where appropriate obtain signed consent.

*Information provided** + Detailed patient education program including self-medication program on ward prior to discharge
	+ Post-transplant patient education booklet which includes diet and lifestyle advice.
* Email a signed shared care guideline with patient details completed to GP for consideration of shared care request.
* Acceptance of shared care should NOT be assumed. Confirmation to participate is required from GP.
* It is the responsibility of the initiating hospital clinic to contact GP.
* Initiate treatment and provide a supply of therapy for at least the first 3 months post discharge.
* Prescribe and monitor treatment according to local guideline or formulary until patient’s condition is stable or predictable.

*After agreement to shared care** Inform GP when patient’s condition is stable or predictable and > 3 months post-transplant.
* Inform GP of abnormal monitoring results and any changes in therapy.
* Evaluate adverse events reported by GP or patient.
* Carry out ongoing monitoring and follow up in line with page 5 and 6 of this shared care guideline, including continued need for therapy.
* Review patient at the request of GP should any problems arise (side-effects / lack of efficacy) within 2 weeks.
* Communicate promptly with the GP if immunosuppression treatment is changed within 3 working days.
* To report any suspected adverse effects to the MHRA: <https://yellowcard.mhra.gov.uk/>
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| **General Practitioner responsibilities**  |
| * Consider shared care proposal within 2 weeks of receipt.
* If in agreement to take over shared care prescribing responsibility, confirmation to the requesting consultant is required within 2 weeks of receipt of this shared care request by completing and emailing the agreement on page 14.
* If do not agree to shared care discuss with requesting consultant or local Borough Medicines Optimisation team within 2 weeks of receipt of shared care request.

*After agreement to shared care** Prescribe dose as recommended once the patient’s condition is stable or predictable and > 3months post-transplant. To adjust dose as advised by the specialist.
* Monitor general health of patient and check adverse effects as appropriate.
* Inform Transplant Specialist of suspected adverse effects and also report to the MHRA via yellow card scheme via <https://yellowcard.mhra.gov.uk/> if necessary.
* Stop treatment on advice of specialist.
* Check compatibility interactions when prescribing new or stopping existing medication. If advice is needed from the specialist team, please see communication information on page 11-12.
* Carry out monitoring and follow up according to pages 6-7 of this shared care guideline.
* Discuss any abnormal results with specialist consultant and agree any action required.
* Refer to Transplant Specialist urgently if patient non-compliance with immunosuppression is suspected.
* Only ask specialist to take back prescribing if unmanageable problems arise, for example erratic blood levels or non-adherence.
* To refer back to specialist if the patient's condition deteriorates.
* Add SNOMED code for shared care prescribing “415522008”
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| **Patient's / Carer’s responsibilities** |
| * To contact the specialist or GP if he or she does not have a clear understanding of any aspect of the treatment.
* To inform prescribing specialist, GP and other healthcare professionals of any other medication being taken, including over the counter products, alternative therapies or recreational drugs.
* To inform community pharmacists that they are using mycophenolate mofetil before purchasing medication over-the-counter
* To attend all hospital and GP appointments
* To take medicines as agreed and take steps to ensure that no doses are missed and not to share medicines with others
* To read the patient information leaflet included with the medication.
* To report any adverse effects or warning symptoms to GP or hospital specialist
* To inform GP and hospital of any changes in addresses or telephone contact numbers.
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1. **CLINICAL INFORMATION**

**NOTE:** The information here is not exhaustive. Please also consult the current Summary of Product Characteristics (SPC) for mycophenolate mofetil prior to prescribing for up to date prescribing information, including detailed information on adverse effects, drug interactions, cautions and contraindications (available via [www.medicines.org.uk](http://www.medicines.org.uk))

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| **Background** | Mycophenolate is a prodrug of mycophenolic acid (MPA), which is a reversible inhibitor of inosine monophosphate dehydrogenase. MPA depletes guanosine nucleotides preferentially in T and B lymphocytes and inhibits their proliferation, thereby suppressing cell-mediated immune responses and antibody formation.Mycophenolate mofetil is added in to augment immunosuppression in those with rejection or for those experiencing nephrotoxicity with tacrolimus. Mycophenolate mofetil should never be used as a single agent. It is usually given in combination with tacrolimus or prednisolone. |
| **Indications** | Licensed for prevention of organ rejection following liver transplantation. |
| **Place in Therapy** | In combination with other immunosuppressants. Mycophenolate mofetil should never be used as a single agent post liver transplant. Mycophenolate mofetil is usually given in combination with tacrolimus and /or steroids.Mycophenolate mofetil may be added in to augment immunosuppression in those with graft rejection or at increased risk of graft rejection, or for those with nephrotoxicity with tacrolimus. **Mycophenolate mofetil should never be prescribed with azathioprine.** |
| **Locally agreed off-label use** | N/A |
| **Initiation and ongoing dose regime****Note:*** Transfer of monitoring and prescribing to primary care is normally after the patient’s dose has been optimized and with satisfactory investigation results for at least 4 weeks.
* The duration of treatment & frequency of review will be determined by the specialist, based on clinical response and tolerability.
* All dose or formulation adjustments will be the responsibility of the initiating specialist unless directions have been discussed and agreed with the primary care clinician.
* Termination of treatment will be the responsibility of the specialist.
 | **Maintenance dose (following initial stabilisation):*** 250 - 500mg BD, increased as tolerated to a maximum dose of 1500mg BD.

**Conditions requiring dose adjustment*** Mycophenolate mofetil dose is adjusted according to blood levels (max 12 hour post dose trough level 3mg/L), liver function and tolerability. Any dose adjustment will be advised by the Specialist Transplant Physician at King’s College Hospital.

**Duration of treatment**Lifelong. |
| **Pharmaceutical aspects** | Route of administration | Oral |
| Formulation | Mycophenolate mofetil is available as a capsule (250mg), a tablet (500mg) and as an oral suspension (1g/5ml). |
| Administration details | The tablets and capsules should be swallowed whole.For patients who are not able to swallow, mycophenolate mofetil liquid can be administered via an NG tube.  |
| Other important information |  |
| **Baseline investigations, initial monitoring and ongoing monitoring to be undertaken by specialist** | **Baseline investigations:**Baseline monitoring tests:* + Liver function tests including aspartate transaminase (AST), alkaline phosphatase (ALP), gamma glutamyl transferase (GGT), bilirubin and albumin
	+ Urea and electrolytes including magnesium
	+ Full Blood Count
	+ Clotting – INR
	+ Mycophenolate level

**Ongoing monitoring:** The following will be monitored and reviewed by the Transplant Consultant at each liver post-transplant outpatient appointment;* Clinical assessment including examination of suspicious skin lesions.
* Bloods tests are taken at each clinic appointment for FBC, INR, urea and creatinine, eGFR and LFT’s. Additional tests (including trough mycophenolate levels) may be required for individual patients.
* Immediately post-transplant, clinic appointments will be weekly. The interval between appointments will be gradually increased based on individual patient needs. All post-transplant patients will be reviewed at least annually in the liver outpatient clinic.
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| **Ongoing monitoring requirements to be undertaken by primary care** | **Monitoring** | **Frequency** |
| * Monitor patient’s overall health and wellbeing
* Monitor for any signs or symptoms of bone marrow suppression e.g. infection or unexplained bruising or bleeding. Any suspicion of bone marrow suppression should necessitate immediate liaison with the Transplant Centre
* Skin care – Skin cancers account for the commonest malignancies after liver transplantation. Suggested preventative measures include:
	+ Patients should carry out regular self-examination and report any new lesions to ensure early detection and ablation of premalignant lesions. Any suspicious lesions require prompt specialist referral.
	+ Patients should avoid direct sun exposure, use appropriate clothing for outdoor activities and apply sunscreens with high sun protection factor. Guidelines for patients can now be found on the web (http://www.scopenetwork.org, <http://www.itscc.org>).
* Liver function – any deterioration in liver function (e.g. deterioration in AST, ALP, GGT, bilirubin, albumin and INR) should necessitate immediate liaison with the Transplant Centre.
* Mycophenolate mofetil trough levels should be checked if there is clinical suspicion of toxicity (signs and symptoms include nausea and diarrhoea, bone marrow suppression, patients are advised to report any inexplicable bruising or bleeding), non-adherence, and interacting medication is commenced or any other cause for concern. Blood samples (3ml of blood in an EDTA tube) should be sent to Phillip Morgan, IDM Service, Institute of Liver Studies King’s College Hospital, Denmark Hill, SE5 9RS, for assay. There is no charge for mycophenolate mofetil assays.
 | Provide an annual review to monitor for adverse effects of medication |
| **Adverse effects and management**Any serious adverse reactions should be reported to the MHRA via the Yellow Care scheme[www.mhra.gov.uk/yellowcard](http://www.mhra.gov.uk/yellowcard)**N.B These are common adverse effects but this list is not exhaustive.** Refer to British National Formulary for list of all potential adverse effects.  | **Result** | **Action for GP** |
| **Nausea and diarrhoea** can occur initially and is usually managed by introducing a low dose and titrating up as tolerated.  | Refer to specialist if persistent or severe. |
| **Bone marrow suppression.** Patient should be warned to report immediately any signs or symptoms of bone marrow suppression e.g. infection or unexplained bruising or bleeding.  | Contact specialist for immediate clinical advice. |
| **Advice to patients and carers**The specialist will counsel the patient with regard to the benefits and risks of treatment and will provide the patient with any relevant information and advice, including patient information leaflets on individual medicines. | Prior to discharge from hospital post-transplant, the patient will receive:* Detailed patient education program including self-medication program on ward
* Post-transplant patient education booklet which includes diet and lifestyle advice.
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| **Criteria for stopping treatment**e.g. poor response, adverse effects requiring cessation | Only after discussion with Transplant Consultant. |
| **Follow up arrangements**e.g. frequency of specialist clinic attendance | **Transplant Consultant:*** Frequency of outpatient appointments is dependent on individual patient progress. Each patient will be reviewed annually as a minimum. Following each outpatient clinic or inpatient stay, any medication changes will be communicated to the patient and the GP by letter within 3 working days. The patient will be informed by telephone of any changes in drug doses that need to be made on an urgent basis.
* Assess need for further investigation.

**GP:*** Monitor patients overall health and wellbeing.
* Carry out monitoring requirements as detailed above annually or at more frequent intervals dependent on individual patient needs.
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| **Pregnancy, paternal exposure and breast feeding**It is the responsibility of the specialist to provide advice on the need for contraception to male and female patients on initiation and at each review but the ongoing responsibility for providing this advice rests with both the GP and the specialist. | **Pregnancy:**Patients planning to become pregnant or in whom pregnancy has occurred should contact the Transplant Consultant for review of their immunosuppression regimen. In general, immunosuppression should be continued during pregnancy. However it is likely that mycophenolate mofetil will be switched to an alternative immunosuppressant in patients planning to become pregnant and/or in pregnant patients. All patients who wish to become or who are pregnant should be reviewed by a Transplant Consultant for consideration of immunosuppressive regimen choice and/or dose adjustment. It is essential to maintain adequate immunosuppression levels during pregnancy and pregnancy can dramatically affect immunosuppressant drug handling.**Breastfeeding:**Breastfeeding should be avoided if taking mycophenolate mofetil. |
| **Additional information** | **Where patient care is transferred from one specialist service or GP practice to another, a new shared care agreement must be completed.****Important Drug Interactions****N.B These are the common drug interactions but this list is not exclusive**.Refer to BNF for list of all potential drug interactions with mycophenolate mofetil. The Liver Team at King’s would appreciate the opportunity to discuss the introduction of any new drug which may interfere with the metabolism of mycophenolate mofetil before it is initiated. The Liver Pharmacy Team can be contacted for advice on 0203 299 9000 extension 5714 or 0203 299 9000 (switchboard) and ask to page 699581.Interacting medication;* Colestyramine and antacids containing aluminium or magnesium impair absorption of mycophenolate mofetil and should not be taken at the same time of day.
* Aciclovir may increase mycophenolate mofetil plasma levels, however this is not considered clinically significant.
* Live vaccines should not be given to patients with an impaired immune response. The antibody response to other vaccines may be diminished.

**Vaccines**Live vaccines are contra-indicated and should be avoided. For further information on vaccines see BNF, chapter 14 for a list of live vaccines. Please contact the Liver Transplant Pharmacist for further advice on vaccines.**Contraception**Please contact the Liver Team at King’s regarding contraception advice.  |
| **Evidence base for treatment and key references** | 1. British National Formulary 83. -March 2022- September 20232. Summary of Product Characteristics. Mycophenolate Mofetil 500mg film coated tablets. Accessed via www.medicines.org.uk. Last updated 16/05/20223. Immunisation against infectious disease: The Green Book. Accessed via www.dh.gov.uk. Last updated 27 November 2020.  |
| **Local arrangements for referral** | See communication and support section below. |

# **COMMUNICATION AND SUPPORT**

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| **King’s College and Princess Royal Hospitals switchboard: 0203 299 9000** |
| **Consultant/specialist team - Liver****Transplantation**Professor Michael HeneghanDr. Kosh AgarwalDr. Varuna AluvihareDr. Abid SuddleDr Deepak JoshiProfessor Sanchez FueyoDr Marianne SamynDr Claire Kelly | Consultant Hepatology Transplant SecretaryTel: 0203 299 4952 |
| **Consultant Surgical Team – Liver****Transplantation**Professor Nigel HeatonMr. Andreas PrachaliasMr. Parthi SrinivasanMr. Hector Vilca-MelendezMr Krishna MenonMr Wayel JassemMiss Miriam Cortes | Consultant Surgical Transplant SecretaryTel: 0203 299 3762 |
| **Immediate medical advice, and out of hours**Transplant Registrar | Tel: 0203 299 9000Bleep 142 or out-of-hours via switchboard (0203 299 9000) |
| **Immediate general advice, and out of hours**Transplant Co-ordinators | Tel: 0203 299 4024or out of hours via switchboard (0203 299 9000),Aircall 842688 via switchboard (0203 299 9000) |
| **Medication – Prescribing advice, interactions, availability of medicines**Transplant Pharmacist: Lindsay Greenland | Email: kch-tr.liverpharmacy@nhs.net |
| **Transplant ward**Todd ward | Tel: 0203 299 3310 |
| **Immunosuppressant Drug Monitoring**Phillip Morgan | Tel: 020 3299 3147Email: KCH-TR.KCHIDMService@nhs.net  |

**Appendix 1: Shared Care Request letter (Specialist to Primary Care Prescriber)**

Dear *[insert Primary Care Prescriber's name]*

Patient name: *[insert patient's name]*

Date of birth: *[insert date of birth]*

NHS Number*: [insert NHS Number]*

Diagnosis: *[insert diagnosis]*

As per the agreed South East London shared care prescribing guideline for *[insert medicine name]* for the treatment of *[insert indication],* this patient is now suitable for prescribing to move to primary care.

The patient fulfils criteria for shared care and I am therefore requesting your agreement to participate in shared care. Where baseline investigations are set out in the shared care protocol, I have carried these out.

I can confirm that the following has happened with regard to this treatment:

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|  | **Specialist to complete** |
| *The patient has been initiated on this therapy and has been on an optimised dose for the following period of time:* |  |
| *Baseline investigation and monitoring as set out in the shared care documents have been completed and were satisfactory* | *Yes / No* |
| *The condition being treated has a predictable course of progression and the patient can be suitably maintained by primary care* | *Yes / No* |
| *The risks and benefits of treatment have been explained to the patient* | *Yes / No* |
| *The roles of the specialist/specialist team/* *Primary Care Prescriber / Patient and pharmacist have been explained and agreed* | *Yes / No* |
| *The patient has agreed to this shared care arrangement, understands the need for ongoing monitoring, and has agreed to attend all necessary appointments* | *Yes / No* |
| *I have enclosed a copy of the shared care protocol which covers this treatment/the SCP can be found here (insert electronic/ web link)* | *Yes / No* |
| *I have included with the letter copies of the information the patient has received* | *Yes / No* |
| *I have provided the patient with sufficient medication to last until* |  |
| *I have arranged a follow up with this patient in the following timeframe e.g. within 3 months / 6 months (please specify)* |  |

Treatment was started on *[insert date started]* and the current dose is *[insert dose and frequency]*.

If you are in agreement, please undertake monitoring and treatment from *[insert date]* NB: date must be at least 1 month from initiation of treatment.

The next blood monitoring is due on *[insert date]* and should be continued in line with the shared care guideline.

Please could you reply to this request for shared care and initiation of the suggested medication to either accept or decline within 14 days.

**Appendix 2: Shared Care Agreement Letter (Primary Care Prescriber to Specialist)**

**Primary Care Prescriber Response**

Dear *[insert Doctor's name]*

Patient *[insert Patient's name]*

NHS Number *[insert NHS Number]*

Identifier *[insert patient's date of birth and/oraddress]*

Thank you for your request for me to accept prescribing responsibility for this patient under a shared care agreement and to provide the following treatment

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| Medicine | Route | Dose & frequency |
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I can confirm that I am willing to take on this responsibility from *[insert date]* and will complete the monitoring as set out in the shared care protocol for this medicine/condition.

Primary Care Prescriber signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_

Primary Care Prescriber address/practice stamp:

**Appendix 3: Shared Care Refusal Letter (Primary Care Prescriber to Specialist)**

**Re*:***

Patient *[insert Patient's name]*

NHS Number *[insert NHS Number]*

Identifier *[insert patient's date of birth and/oraddress]*

Thank you for your request for me to accept prescribing responsibility for this patient.

In the interest of patient safety, the local NHS in South East London have classified *[insert medicine name]* as a Shared Care medicine, and requires a number of conditions to be met before transfer can be made to primary care.

**I regret to inform you that in this instance I am unable to take on responsibility due to the following:**

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|  |  | **Tick which apply** |
| **1.** | **The prescriber does not feel clinically confident in managing this individual patient’s condition, and there is a sound clinical basis for refusing to accept shared care**As the patients primary care prescriber I do not feel clinically confident to manage this patient’s condition because *[insert reason]*. I have consulted with other primary care prescribers in my practice who support my decision. This is not an issue which would be resolved through adequate and appropriate training of prescribers within my practice.**I have discussed my decision with the patient and request that prescribing for this individual remain with you as the specialist, due to the sound clinical basis given above.** |  |
| **2.** | **The medicine or condition does not fall within the criteria defining suitability for inclusion in a shared care arrangement**As the medicine requested to be prescribed is not included on the national list of shared care drugs as identified by RMOC (Regional Medicines Optimisation Committees) or is not a locally agreed shared care medicine I am unable to accept clinical responsibility for prescribing this medication at this time. **Until this medicine is identified either nationally or locally as requiring shared care the responsibility for providing this patient with their medication remains with you**  |  |
| **3.** | **A minimum duration of supply by the initiating clinician**As the patient has not had the minimum supply of medication to be provided by the initiating specialist I am unable to take clinical responsibility for prescribing this medication at this time. Therefore can you please contact the patient as soon as possible in order to provide them with the medication that you have recommended.***Until the patient has had the appropriate length of supply the responsibility for providing the patient with their medication remains with you.*** |  |
| **4.** | **Initiation and optimisation by the initiating specialist**As the patient has not been optimised on this medication I am unable to take clinical responsibility for prescribing this medication at this time. Therefore can you please contact the patient as soon as possible in order to provide them with the medication that you have recommended.***Until the patient is optimised on this medication the responsibility for providing the patient with their medication remains with you.*** |  |
| **5.** | **Shared Care Protocol not received**As legal responsibility for clinical care lies with the clinician who signs the prescription, I need to ensure that I am in possession of sufficient clinical information for me to be confident to prescribe this treatment for my patient and it is clear where each of our responsibilities lie to ensure the patient is safely managed***.***For this reason I am unable to take clinical responsibility for prescribing this medication at this time, therefore would you please contact the patient as soon as possible in order to provide them with the medication that you have recommended.***Until I receive the appropriate SCP, responsibility for providing the patient with their medication remains with you.*** |  |
| **6.** | **Other (Primary Care Prescriber to complete if there are other reasons why shared care cannot be accepted. NB: Capacity issues to be discussed with local primary care Medicines Optimisation Team prior to returning this form)** |  |

I would be willing to consider prescribing for this patient once the above criteria have been met for this treatment.

NHS England ‘Responsibility for prescribing between Primary & Secondary/Tertiary care’ guidance (2018) states that “when decisions are made to transfer clinical and prescribing responsibility for a patient between care settings, it is of the utmost importance that the GP feels clinically competent to prescribe the necessary medicines. It is therefore essential that a transfer involving medicines with which GPs would not normally be familiar should not take place without full local agreement, and the dissemination of sufficient, up-to-date information to individual GPs.” In this case we would also see the term GP being interchangeable with the term Primary Care Prescriber.

Please do not hesitate to contact me if you wish to discuss any aspect of my letter in more detail and I hope to receive more information regarding this shared care agreement as soon as possible

Yours sincerely

**Primary Care Prescriber signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_**

**Primary Care Prescriber address/practice stamp:**