Cambridgeshire & Peterborough Integrated Care System

NHS Cambridgeshire & Peterborough

Shared Care Guideline

Denosumab (Prolia®) for the treatment of osteoporosis in postmenopausal women and in men at increased risk of fractures

Contents

Executive Summary 2
1. Scope 3
2. Aim 3
3. Introduction 3
4. Abbreviations 3
5. Dose, Administration and Storage 3
6. Adverse Effects 4
   Very common (≥ 1 in 10) 4
   Common (≥ 1 in 100 and < 1 in 10) 4
   Uncommon (≥ 1 in 1000 and < 1 in 100) 4
   Rare (≥ 1 in 10000 and < 1 in 1000) 4
   Very Rare (< 1/10,000) 4
   Not known 4
7. Cautions 5
   Warnings for excipients: 6
8. Contraindications 7
9. Interactions 7
10. Monitoring Standards & Actions to take in the event of abnormal test results/symptoms 7
   Pre-treatment assessment by the hospital team 7
   Initiation and ongoing monitoring by the GP 7
11. Shared Care Responsibilities 8
   a. Hospital specialist: 8
   b. General Practitioner: 9
   c. Community Pharmacist: 10
   d. Patient or parent/carer: 10
12. Contact details for advice and support 10
   Cambridge University Hospital NHS Foundation Trust 10
   North West Anglia NHS Foundation Trust 11
13. Equality and Diversity Statement 11
14. Disclaimer 11
15. Document Ratification Details 11
Appendix 1: Shared Care Request Letter (Specialist to Primary Care Prescriber) 12

Executive Summary

- Denosumab is licensed and approved within the Cambridgeshire and Peterborough health economy for the treatment of osteoporosis in postmenopausal women (NICE TA204) and in men at increased risk of fractures (primary and secondary prevention).
- In primary prevention, it is recommended for patients at increased risk of fractures:
  - who are unable to comply with the special instructions for administering alendronate and either risedronate or etidronate or have an intolerance of, or a contraindication to those treatments **and**
  - who have a combination of T-score (BMD), age and number of independent clinical risk factors for fracture as indicated in table 1.

Table 1 - T scores (DS) at (or below) which denosumab is recommended when alendronate and either risedronate or etidronate are unsuitable

Age (years)	0 independent clinical risk factors for fracture	1 independent clinical risk factor for fracture	2 independent clinical risk factors for fracture
65-69	Treatment with denosumab is not recommended	-4.5	-4.0
70-74	-4.5	-4.0	-3.5
75 or older	-4.0	-4.0	-3.0

- In secondary prevention, Denosumab is recommended as a treatment option for the secondary prevention of osteoporotic fragility fractures only in postmenopausal women at increased risk of fractures who are unable to comply with the special instructions for administering alendronate and either risedronate or etidronate, or have an intolerance of, or a contraindication to, those treatments.
- For the purposes of this guidance, independent clinical risk factors for fracture are assessed using an assessment tool (FRAX or QFracture) taking into consideration: parenteral history of hip fracture, previous fractures, alcohol intake, rheumatoid arthritis, current smoking, use of glucocorticoids and secondary osteoporosis.
- Denosumab is administered as a single subcutaneous injection once every six months into the thigh, abdomen or back of arm. It can be administered by an individual who is adequately trained in injection techniques so is appropriate for administration in primary care.
- Patients must be adequately supplemented with calcium and vitamin D and checked for risk factors prior to starting therapy – see cautions for MHRA advice.
- **Patients will be assessed for their suitability for treatment with denosumab by their Specialist. Initiation and administration of all doses of denosumab will be in Primary Care.** Following cessation of denosumab rapid bone loss occurs and increased risk of vertebral fractures has been reported. **Patients should not stop denosumab without specialist review.**
- Administration of denosumab in Primary Care, for the indication within this shared care agreement is funded as a Locally Commissioned Service.
- The responsibilities of the hospital specialist, GP, community pharmacist and patient for this Shared Care Guideline can be found within this document.

Sharing of care depends on communication between the specialist, GP, community pharmacist and the patient or their parent/carer. The intention to share care should be explained to the patient and accepted by them. Patients are under regular follow-up, and this provides an opportunity to discuss drug therapy. The doctor/healthcare professional who prescribes the medication has the clinical responsibility for the drug and the consequences of its use.

1. Scope

Prescribing, Administration and Monitoring by General Practitioners.

2. Aim

To provide advice on the safe prescribing, monitoring and administration of denosumab for use in the management of osteoporosis.

3. Introduction

Denosumab is a RANK ligand (RANKL) inhibitor. It is a human monoclonal antibody that inhibits osteoclast formation, function, and survival, thereby decreasing bone resorption. This shared care guideline outlines the responsibility of primary and secondary care clinicians using denosumab for the treatment of osteoporosis in postmenopausal women and in men at increased risk of fractures.

4. Abbreviations

BMD	bone mineral density
CKD	chronic kidney disease
FRAX	fracture risk assessment tool
GP	general practitioner
MHRA	medicines and healthcare products regulatory agency
ONJ	osteonecrosis of the jaw
PTH	parathyroid hormone
RANK	receptor activator of nuclear factor kappa-b
SD	standard deviation
SPC	summary of product characteristics

5. Dose, Administration and Storage

- Denosumab (Prolia®) 60 mg solution for injection in pre-filled syringe**.** The recommended dosage is 60 mg once every 6 months.
- Denosumab is administered as a single subcutaneous injection once every six months into the thigh, abdomen or back of arm. Administration should be performed by an individual who has been adequately trained in injection techniques.
- Patients must be adequately supplemented with calcium and vitamin D.
- Patients treated with denosumab (Prolia®) should be given the package leaflet and the patient reminder card.
- The need for continued treatment should be re-evaluated periodically based on the benefits and potential risks of denosumab on an individual patient basis, particularly after 5 or more years of use. A course of treatment can be up to 10 years; however, duration of treatment should be in line with the patient's individual treatment plan.

Patients should not be stopped or ongoing treatment with denosumab delayed without specialist review (due to increased risk of multiple vertebral fractures reported). Patients should be sent for a repeat DXA scan as part of the ongoing review process by the patient's specialist.

- Store in a refrigerator (2°C to 8°C). Once removed from the refrigerator, Prolia may be stored at room temperature (up to 25°C) for up to 30 days in the original container. It must be used within this 30-day period.

6. Adverse Effects

Very common (≥ 1 in 10)

- Pain in extremity
- Musculoskeletal pain

Common (≥ 1 in 100 and < 1 in 10)

- Urinary tract infection
- Upper respiratory tract infection
- Sciatica
- Constipation
- Abdominal discomfort
- Rash
- Eczema
- Alopecia

Uncommon (≥ 1 in 1000 and < 1 in 100)

- Diverticulitis
- Cellulitis
- Ear infection
- Lichenoid drug eruptions

Rare (≥ 1 in 10000 and < 1 in 1000)

- Drug hypersensitivity
- Anaphylactic reaction
- Hypocalcaemia
- Osteonecrosis of the jaw
- Atypical femoral fractures

Very Rare (< 1/10,000)

- Hypersensitivity vasculitis

Not known

- Osteonecrosis of the external auditory canal

7. Cautions

- Ensure vitamin D level is adequate (preferably >50 nmol/L). If **Vitamin D deficient** – treat before giving denosumab therapy.
- **Hypocalcaemia** - Denosumab is associated with a risk of **hypocalcaemia.** This risk increases with the degree of renal impairment. Hypocalcaemia usually occurs in the first weeks of denosumab treatment, but it can also occur later in treatment. **It is important to identify patients at risk for hypocalcaemia.** Hypocalcaemia must be corrected by adequate intake of calcium and vitamin D before initiating therapy. Clinical monitoring of calcium levels is recommended before each dose and, in patients predisposed to hypocalcaemia within two weeks after the initial dose. If any patient presents with suspected symptoms of hypocalcaemia during treatment calcium levels should be measured. Patients should be encouraged to report symptoms indicative of hypocalcaemia. These results must be no older than four months at the time of the administration. Please note concomitant glucocorticoid treatment is an additional risk factor for hypocalcaemia.
  MHRA/CHM advice: Denosumab: fatal cases of severe hypocalcaemia – monitoring recommendations (October 2012)
  MHRA/CHM advice: Denosumab: monitoring for hypocalcaemia – updated recommendations (September 2014)
- **Renal impairment** - **No dose adjustment required in reduced renal function.** Adequate intake of **calcium, vitamin D and regular monitoring of calcium** is especially important in patients with **severe renal impairment (creatinine clearance < 30mL/min) or receiving dialysis, as these patients are at greater risk of developing hypocalcaemia.** The risks of developing hypocalcaemia and accompanying parathyroid hormone elevations increase with increasing degree of renal impairment.
- **Increased risk of infection** - patients receiving Denosumab may develop skin infections (predominantly cellulitis) leading to hospitalisation. Patients should be advised to seek prompt medical attention if they develop signs or symptoms of cellulitis.
- **Atypical femoral fractures** have been reported rarely in patients receiving denosumab for the long-term treatment (2.5 or more years) of postmenopausal osteoporosis. Patients should be advised to report any new or unusual thigh, hip, or groin pain during treatment with denosumab. MHRA/CHM advice: Denosumab: atypical femoral fractures (February 2013).
- Denosumab is associated with a risk of **osteonecrosis of the jaw** (ONJ). Check for ONJ risk factors before starting treatment. A dental examination and appropriate preventative dentistry are now recommended for patients with risk factors. All patients should be encouraged to maintain good oral hygiene, receive routine dental check-ups, and immediately report any oral symptoms such as dental mobility, pain or swelling or non-healing of sores or discharge during treatment with Denosumab. A patient reminder card should be provided when initiating treatment. While on treatment, invasive dental procedures should be performed only after careful consideration and be avoided in close proximity to Denosumab administration. The start of treatment / new treatment course should be delayed in patients with unhealed open soft tissue lesions in the mouth.

MHRA/CHM advice: Denosumab: osteonecrosis of the jaw – further measures to minimise risk (July 2015).

MHRA/CHM advice: Denosumab: minimising the risk of osteonecrosis of the jaw (September 2014).

- **Osteonecrosis of the external auditory canal** has been reported with denosumab and this should be considered in patients who present with ear symptoms including chronic ear infections or in those with suspected cholesteatoma. Check patients for risk factors for osteonecrosis of the external auditory canal. MHRA/CHM advice: Denosumab: reports of osteonecrosis of the external auditory canal (June 2017)
- Cases of multiple vertebral fractures have been reported in patients within 18 months of discontinuation or interruption of ongoing denosumab 60 mg treatment for osteoporosis. **Do not discontinue denosumab without a specialist review.** Healthcare professionals should re- evaluate the need for continued treatment periodically based on expected benefits and potential risks of treatment on an individual basis, particularly after 5 or more years of use. Following discontinuation, transition to an alternative antiresorptive therapy should be considered to prevent rebound increase in bone turnover, bone loss and increased fracture risk. MHRA/CHM advice: Denosumab: increased risk of multiple vertebral fractures after stopping or delaying ongoing treatment (August 2020)
- **Missed doses:** If a patient misses a prescribed dose of denosumab, the missed injection should be administered as soon as possible (within 1 month of the scheduled date). After this, the next injection will be scheduled 6 months from the date of your last injection.
- **Pregnancy and breastfeeding:** Denosumab is not recommended for use in pregnant women and women of child-bearing potential not using contraception. Ensure effective contraception in women of child-bearing potential, during treatment and for at least 5 months after stopping treatment. For patients wishing to breastfeed, a decision on whether to abstain from breast-feeding or to abstain from therapy with denosumab should be made, taking into account the benefit of breast-feeding to the newborn/infant and the benefit of denosumab therapy to the woman.
- **Hepatic impairment:** the safety and efficacy of denosumab has not been studied in patients with hepatic impairment.
- **Long-term antiresorptive treatment** (including both denosumab and bisphosphonates) may contribute to an increased risk for adverse outcomes such as osteonecrosis of the jaw and atypical femur fractures due to significant suppression of bone remodeling.
- **Concomitant treatment with other denosumab-containing medicinal products:** Patients being treated with denosumab should not be treated concomitantly with other denosumab- containing medicinal products (for prevention of skeletal related events in adults with bone metastases from solid tumors).

  Warnings for excipients:
  - This medicine contains 47 mg sorbitol in each mL of solution. The additive effect of concomitantly administered products containing sorbitol (or fructose) and dietary intake of sorbitol (or fructose) should be considered.

- This medicinal product contains less than 1 mmol sodium (23 mg) per 60 mg that is to say essentially 'sodium-free'.

8. Contraindications

- Hypersensitivity to the active substance
- Hypocalcaemia

9. Interactions

- Cinacalcet might increase the risk of hypocalcaemia when given with Denosumab. Manufacturer makes no recommendation.
- Etelcalcetide might increase the risk of hypocalcaemia when given with Denosumab. Manufacturer makes no recommendation.

Further information about dose and administration, adverse effects, cautions, contraindications and interactions can be found in the British National Formulary and the Summary of Product Characteristics.

10. Monitoring Standards & Actions to take in the event of abnormal test results/symptoms

Pre-treatment assessment by the hospital team

- Bone profile, vitamin D and PTH. Correct vitamin D deficiency before initiating therapy.
- Serum creatinine – increased risk of hypocalcaemia if creatinine clearance <30mL/min.
- Calcium levels – hypocalcaemia must be corrected by adequate intake of calcium and vitamin D before initiating therapy. Identify patients at risk for hypocalcaemia (i.e., those with significant renal disease CKD 4/5 or with secondary hyperparathyroidism). Patient should be encouraged to report symptoms indicative of hypocalcaemia.
- Check for ONJ risk factors before starting treatment. A dental examination and appropriate preventative dentistry is recommended for patients with risk factors.
- Give a patient reminder card.

Initiation and ongoing monitoring by the GP

- Hypocalcaemia or vitamin D deficiency must be corrected by adequate intake of calcium and/or vitamin D before initiating therapy.
- Calcium levels should be checked and confirmed to be within normal limits:
  - In the two-week period **before** each dose is given for all patients
  - Within two weeks **after** the initial dose in patients with risk factors for hypocalcaemia e.g., severe renal impairment, creatinine clearance <30ml/min.
  - If suspected symptoms of hypocalcaemia occur or if otherwise indicated based on the clinical condition of the patient.
- Serum creatinine before each treatment.

(CKD: chronic kidney disease; PTH: parathyroid hormone; ONJ: osteonecrosis of the jaw)

Table 2 - advice on what action to take if test results rise or fall below defined limits:

Test results	Action
Creatinine clearance <30ml/min	Monitor for signs or symptoms of hypocalcaemia. Check calcium levels before each dose and within two weeks after the initial dose.
Adjusted serum calcium < 2.2mmol/L	**Contact patient's specialist for advice.** Correct hypocalcaemia by adequate intake of calcium.
Vitamin D level <50 nmol/L	Treat vitamin D deficiency as per local guidelines. Where patient is identified as deficient, the entire full course of treatment should be provided to the patient.

Table 3 - advice on what action to take if symptoms or side effects are reported by the patient:

Symptoms/side effects	Action
Atypical femoral fractures MHRA/CHM advice: Denosumab:atypical femoral fractures (February 2013)	**Seek specialist advice** – Discontinuation of denosumab in patients suspected to have an atypical femoral fracture should be considered by the patient's specialist after an assessment of the benefits and risks of continued treatment.
Osteonecrosis of the jaw MHRA/CHM advice: Denosumab: osteonecrosis of the jaw – further measures to minimise risk (July 2015).	Seek specialist advice – The management plan of the patients who develop ONJ should be set up in close collaboration between the treating physician and a dentist or oral surgeon with expertise in ONJ. Temporary interruption of treatment should be considered until the condition resolves and contributing risk factors are mitigated where possible.
Symptoms of hypocalcaemia e.g., muscle spasms, twitches, cramps, numbness or tingling in the fingers, toes, or around the mouth.	**Monitor plasma-calcium concentration and contact patient's specialist for advice.** Correct hypocalcaemia by adequate intake of calcium.
Osteonecrosis of the external auditory canal MHRA/CHM advice: Denosumab: reports of osteonecrosis of the external auditory canal (June 2017)	**Seek urgent specialist advice.**
Cellulitis or other skin infections	**Management as per local guidance.**

11. Shared Care Responsibilities

a. Hospital specialist:

- Confirm diagnosis of osteoporosis.
- Assess suitability for treatment (For post-menopausal women as per NICE TA204).
- Discuss the benefits and side effects of treatment with the patient and provide written information to the patient.
- Ensure patients are aware that they should report symptoms of hypocalcaemia.

- Perform pre-treatment screening (contraindications, and suitability for treatment including eGFR, calcium and vitamin D levels.) Note that patients with severe renal impairment (creatinine clearance < 30mL/min) or receiving dialysis are at greater risk of developing hypocalcaemia.
- Screen patient for ONJ (osteonecrosis of the jaw) risk factors prior to starting treatment.
- Send a letter to the GP requesting shared care for the patient including the recommendation for the GP to initiate treatment.
- Provide appropriate education of the condition and the new treatment
- Advise the GP practice on the patient individualised treatment plan, and if appropriate will arrange DXA scan at baseline
- Inform the GP after each clinic attendance if there is any change to treatment or monitoring.
- Inform GP by letter of patients who do not attend clinic appointments.
- Report any significant or unexpected adverse events to the MHRA via the Yellow Card Reporting Scheme.
- To provide any advice to the patient/carer when requested.
- Review patient annually and promptly inform the GP of any changes or treatment plan within 14 days.
- Ensure patient understands that their treatment should not be stopped without having a clear plan for managing rebound high bone turnover.

b. General Practitioner:

- Agreement to shared care guideline by the GP.
- Prescribe and administer the drug treatment (including 1st dose and all subsequent doses) as described.
- To stop other drugs affecting bone metabolism e.g., bisphosphonates, parathyroid hormone and ensure these are removed from the patient's repeat prescription.
- Administration should be performed by an individual who is competent or has been trained in the administration of subcutaneous injections. In order to improve the traceability of biological medicinal products, the name and the batch number of the administered product should be clearly recorded and ensure that individuals administering the product are aware of the need to record the batch number of the product.
- It is important that treatment with denosumab is administered on time every 6 months; timely reminders and repeat appointments will need to be arranged.
- Ask the patient to report symptoms of hypocalcaemia.
- Provide the package leaflet and the patient reminder card to the patient.
- Ensure adequate supplementation with vitamin D and calcium.
- Report any adverse events to the hospital specialist, where appropriate.
- Report any significant or unexpected adverse events to the MHRA via the Yellow Card Reporting Scheme.
- Maintain an up-to-date register of patients being treated under this service including:
    - Number of patients currently on the register
    - Number of injections performed
    - Number of pre injection assessments that have been carried out prior to injection

  - Name of trained persona administering the injection
- Ensure that a six-monthly recall system is setup on the GP clinical system. *Note that GPs are required to check patient's calcium level 2 weeks before the next dose of denosumab is due.*
- Refer patient to hospital specialist for DXA scan or alternative, if advised at the time period identified in the patient's treatment plan.
- Ensure adequate staff training and facilities for assessing patients and administering the injection.
- Request advice from the hospital specialist when necessary.
- Do not stop or delay ongoing treatment with denosumab without a specialist review (due to increased risk of multiple vertebral fractures reported).

c. Community Pharmacist:

- Where an FP10 prescription for denosumab is provided directly to patient or their representative, for example, inform patient or their representative that Prolia may be stored at room temperature (up to 25°C) for **up to 30 days** in the original container. It must be administered by a trained healthcare professional within the 30-day period.
- Ensure patient understands that their treatment should not be stopped without having a clear plan for managing rebound high bone turnover.

d. Patient or parent/carer:

- Report to the hospital specialist or GP if they do not have a clear understanding of their treatment.
- Share any concerns in relation to treatment with denosumab.
- Patients must attend their scheduled clinic and blood test appointments (where relevant).
- Patients must not exceed the recommended dose.
- Must inform other clinical staff that they are receiving treatment.
- Report any adverse effects to the hospital specialist or GP.
- Remain good oral health and visit the dentist regularly; inform dentist of Denosumab treatment.
- Understand the need not to stop treatment without having a clear plan for managing rebound high bone turnover.

12. Contact details for advice and support

Cambridge University Hospitals NHS Foundation Trust

Specialist	Post	Telephone
Dr Kenneth Poole	Consultant Rheumatologist	01223 216774
Dr Gavin Clunie	Consultant Rheumatologist	01223 216774
Dr Christopher Chan	Consultant Rheumatologist	01223 216774
Dr Mark Lillicrap	Consultant Rheumatologist	01223 216774
Chloe Wood	Metabolic Bone Specialist Nurse Practitioner	01223 254933 option 2 option 2
Urgent enquiries/Out of hours contact	On call Rheumatology service via switchboard	

North West Anglia NHS Foundation Trust

Specialist	Post	Telephone
Dr Sandeep Dahiya	Consultant Rheumatologist	01733 676764
Dr Poonam Sharma	Consultant Rheumatologist	01480 416744
Dr Wiranthi Gunasekera	Consultant Rheumatologist	01733 676762
Dr John Pradeep	Consultant Rheumatologist	01480 442824
Dr Maeve Fifield	Consultant Rheumatologist	01733 676762
Ms. Hannah Jenkins	Osteoporosis Specialist Nurse Practitioner	01733 676766
Urgent enquiries	Urgent queries to be sent via the e-RS advice and guidance portal. Medical emergencies, the medical team on call should be contacted.	

13. Equality and Diversity Statement

This document complies with the Cambridge University Hospitals Foundation Trust and North West Anglia Hospital Foundation Trust service Equality and Diversity statement.

14. Disclaimer

It is your responsibility to check that this printed out copy is the most recent issue of this document.

15. Document Ratification Details

Ratification Process	Details
Authored by:	Cambridge University Hospitals NHS Foundation Trust
Ratified by:	Cambridgeshire and Peterborough Joint Prescribing Group
Date ratified:	January 2023 (January 2026 – contact details updated)
Review date:	January 2026
Version number:	3

The information contained in this guideline is issued on the understanding that it is accurate based on the resources at the time of issue. For further information please refer to the most recent Summary of Product Characteristics.

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: Osteoporosis

Denosumab (Prolia®) recommended. Initiation on specialist advice. Guidance for Primary Care Prescribers in Cambridgeshire and Peterborough ICS.

1. **Indication**: Your patient was seen on [insert date] and I have assessed the patient and confirmed their suitability for treatment with denosumab for the treatment of osteoporosis, as per NICE osteoporosis guidance. In line with local ICS commissioning intention and prescribing classifications, Denosumab is designated as 'Recommended specialist advice', i.e. administration from the first dose is undertaken in primary care, under a shared care arrangement. The local enhanced service will fund the administration and monitoring of denosumab injections for the indication above.

2. **Prescription:** The patient fulfils the criteria for shared care, and I am therefore requesting your agreement to participate in shared care for this patient. Where baseline investigations are set out in the shared care protocol, I have carried these out. In line with the Cambridgeshire and Peterborough Shared Care Guideline (attached), please could you initiate, prescribe and arrange administration of denosumab injection for the above patient including the monitoring as outlined within the Shared Care Guideline (attached). Denosumab is to be administered as a single subcutaneous injection into the thigh, abdomen or back of the arm. The recommended dosage is 60 mg once every 6 months (twice a year).

3. **Important Safety Information:** Please read MHRA/CHM advice: Denosumab: increased risk of multiple vertebral fractures after stopping or delaying ongoing treatment (August 2020)**.** It is important that the treatment is started immediately, then given once every 6 months and not stopped or delayed with specialist advice. Patients must receive their 6 monthly injection in a timely manner, within 2 weeks of the due date either side. If a patient does not receive the denosumab injection every six months, there may be rebound bone loss and multiple vertebral fractures may occur. If a patient does not wish to receive further injections, please contact the specialist team, in charge of the patient's care urgently who can advise on alternative therapies.

4. **Treatment duration:** usually for a minimum three-year course of treatment; however, treatment is often continued if the fracture risk is still high, when treatment is tolerated well and there are no recognised complications (eg proximal femoral bone pain suggestive of Atypical Femoral stress Fracture (see also guide for long-term bisphosphonate use). After 6 doses it is appropriate to review the balance of risk to benefit of continuing denosumab, but

please note that treatment should not be stopped without specialist review. You can refer patients to the specialist service for advice or guidance. You can seek specialist advice on any aspect of the patient's care which is of concern and regarding anything that may affect treatment. Please write to the patient's supervising consultant team.

5. **Pre-injection checks:** Hypocalcaemia must be corrected by adequate intake of calcium and vitamin D before initiating therapy. Prior to each administration of denosumab, please check the patient's bone profile, vitamin D, renal function and PTH because it is important to identify patients at risk of hypocalcaemia: typically those with significant renal disease, chronic kidney disease stage 4/5 or with secondary hyperparathyroidism. Testing calcium levels is recommended before each dose. In patients at risk of hypocalcaemia, a calcium check is recommended within the two weeks after the first dose. If any patient presents with suspected symptoms of hypocalcaemia during treatment, calcium levels should be measured. Patients should be encouraged to report symptoms indicative of hypocalcaemia.

6. **Oral hygiene:** Denosumab (Prolia®) is associated with a risk of osteonecrosis of the jaw. Therefore, all patients receiving treatment should maintain good oral hygiene, attend routine dental check-ups and immediately report any oral symptoms such as dental mobility, pain, or swelling to a doctor and dentist.

I am requesting your agreement to sharing the care of this patient in accordance with the attached shared care guideline. Please undertake monitoring and initiate treatment from [insert date].

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

Criteria	Specialist to complete
Baseline investigation and monitoring as set out in the shared care documents have been completed and were satisfactory, see test results below.	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 guideline which covers this treatment/the SCG 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 arranged a follow up with this patient in the following timescale	[insert timescale]

Criteria	Specialist to complete
I recommend that the patient receives denosumab for the following duration **Do not stop or delay ongoing treatment with denosumab without a specialist review (due to increased risk of multiple vertebral fractures reported).**	[insert timescale]

These are the last results available in the patient's hospital records, please note dates (since calcium levels should be checked in the two-week period before the denosumab dose is given, whereas the others need only be within four months).

[insert results]

If your practice is not able to accept shared care guidance for this patient or administer denosumab injections, please immediately contact the service via [insert email].

Thank you and kind regards

[insert consultant name]