

Bisphosphonate treatment for osteoporosis

Bisphosphonates have been widely used in the treatment of osteoporosis with robust data demonstrating efficacy in fracture risk reduction with three to five years of treatment or up to ten years in some cases. This bulletin clarifies who to treat with bisphosphonates, how to manage long-term bisphosphonates and cost-effective bisphosphonate choices.

Recommendations

- All practice clinical staff accurately record READ/SNOMED CT codes for fracture risk factors, osteoporosis diagnosis and whether treatment is offered or not indicated in the patient's notes.
- Only use FRAX® or QFracture® risk assessment tools after patients are found to meet fracture risk assessment criteria as set out in National Institute for Health and Care Excellence (NICE) Clinical Guideline (CG) 146.
- After the FRAX® or QFracture® 10-year fracture risk has been calculated, use treatment thresholds set out in NICE Quality Standard (QS) 149 to guide when to offer bisphosphonate treatment. (In Scotland, consider a dual-energy X-ray absorption (DXA) scan if the QFracture® risk is $\geq 10\%$. If the DXA scan results indicates osteoporosis, offer drug treatment.)
- Provide patients with an information leaflet to help them understand osteoporosis and their bisphosphonate treatment (attachments 1 and 2).
- Set up treatment reviews on the GP clinical system at appropriate intervals to check for adherence and adverse effects, starting and reviewing a treatment break, or discontinuing treatment through shared decision making.
- Review whether the bisphosphonate can be stopped, either completely or for a treatment break, at the following intervals:
 - » Three years for patients with multimorbidity (two or more long-term conditions)
 - » Three years for zoledronic acid
 - » Five years for alendronic acid, risedronate sodium, and ibandronic acid
 - » Ten year review for all patients for the continued need for a bisphosphonate as there is no evidence to support prescribing beyond ten years.
- When a drug treatment break is started, assess the need for recommencing the bisphosphonate at the end of the following intervals or sooner if there is a new fracture:
 - » 18 months for risedronate sodium
 - » Two years for alendronic acid or ibandronic acid
 - » Three years for zoledronic acid.
- Use the least costly oral bisphosphonate (NICE Technology Appraisal (TA) 464), currently generic alendronic acid 70mg tablets once weekly. If alendronic acid cannot be used, use generic risedronate sodium tablets 35mg once weekly. If risedronate sodium cannot be used, use ibandronic acid 150mg tablets once a month. If an oral bisphosphonate is not suitable, use generic zoledronic acid 5mg intravenous infusion once a year.

Background

The NICE TA464, NICE CG146, NICE QS149 and National Osteoporosis Guidelines Group (NOGG) 2017 guideline need to be used together to determine whether a patient with osteoporosis should be prescribed a bisphosphonate to reduce their fracture risk.¹⁻⁴ NICE CG146 is first used to assess the patient's risk of fragility fracture and decide whether a FRAX®/QFracture® 10-year risk assessment should be done.¹ Once the FRAX®/QFracture® 10-year risk percentage is known, this is compared to the NICE QS149/NOGG 2017 treatment thresholds.^{3,4} Oral bisphosphonate treatment is regarded as cost-effective for anyone meeting these treatment thresholds in line with NICE TA464.¹

The lack of evidence for long term use beyond ten years and concerns over rare (≥ 1 in 10,000 and < 1 in 1,000 cases) but serious adverse effects of atypical femoral fractures and osteonecrosis of the jaw and very rare (< 1 in 10,000 cases) osteonecrosis of the external auditory canal have raised questions on how to manage long-term bisphosphonates.⁵⁻⁸ The NOGG 2017 guideline provides some advice on managing long-term bisphosphonate treatment to optimise patient outcomes.⁴ This should be used alongside NICE Guideline (NG) 56 which offers alternative treatment lengths for patients with multimorbidity taking alendronic acid, risedronate sodium, and ibandronic acid.⁹

Who should have their fracture risk assessed?

Table 1 lists the patients over 18 with osteoporosis who should have their 10-year fracture risk percentage calculated using FRAX® or QFracture® risk assessment tools in line with NICE CG146.² GP clinical systems can find these fracture risk factors if READ/SNOWMED CT codes have been appropriately applied. All practice clinical staff should ensure that fracture risk factors are accurately READ/SNOMED CT coded in patient's notes.

Table 1. Fracture risk assessment eligibility criteria in patients over 18 with osteoporosis²

Consider fracture risk assessment in:
<ul style="list-style-type: none"> • All women aged over 65 years • All men aged over 75 years • Women aged 50-65 years and men aged 50-75 years if any of the following risk factors are present: <ul style="list-style-type: none"> » Previous fragility fracture » Current use or frequent recent use of oral or systemic glucocorticoids » History of falls » Family history of hip fracture » Other causes of secondary osteoporosis » Low body mass index (BMI) (less than 18.5 kg/m²) » Smoking » Alcohol intake of more than 14 units per week for women and more than 21 units per week for men • People aged under 50 years fracture risk assessment should only be undertaken if they have major risk factors including: <ul style="list-style-type: none"> » Current or frequent recent use of oral or systemic glucocorticoids » Untreated premature menopause » Previous fragility fracture

The Institute of Osteopathy (IOS) has produced a NICE endorsed infographic which provides a visual guide to assessing the risk of fragility fracture in line with NICE CG146.¹⁰ It is available on the IOS website.

Further guidance on measuring 10-year fracture risk is also available in NICE CG146 and from the following websites:^{2,11,12}

FRAX®: www.sheffield.ac.uk/FRAX®/tool.aspx

QFracture®: www.QFracture®.org

Patients currently on bisphosphonates should have their eligibility for a fracture risk assessment re-reviewed during medication reviews. If the eligibility criteria are no longer met, then consider stopping treatment through shared decision making with the patient.

How is fracture risk classified?

The fracture risk classification will depend upon which fracture risk assessment tool has been used, FRAX® or QFracture®. When FRAX® is used patients are classified to be at low risk, intermediate risk or high risk of fracture when their fracture risk has been assessed in the absence of a bone mineral density (BMD) measurement.¹¹

Table 2 lists the lower and upper assessment thresholds for major osteoporotic fracture probability based on fracture probabilities derived from FRAX®. Low, intermediate and high risk patients are classified as:

- Low fracture risk patients – FRAX® score falls below the lower assessment threshold.
- Intermediate fracture risk patients – FRAX® score falls between the lower and upper assessment thresholds.
- High fracture risk patients – FRAX® score falls above the upper assessment threshold.

Table 2. Lower and upper assessment thresholds for major osteoporotic fracture probability based on fracture probabilities derived from FRAX® (BMI set to 25kg/m²)³

10-year probability of a major osteoporotic fracture (%)		
Age (years)	Lower assessment threshold	Upper assessment threshold
40	2.6	7.1
45	2.7	7.2
50	3.4	8.6
55	4.5	11
60	5.9	14
65	8.4	19
≥70	11	24

The 2017 NOGG guideline provides the information in table 2 as a graph and is available at: <https://www.sheffield.ac.uk/NOGG/result-nobmd.html?age=70&fracture1=11&glucocorticoids=0&sex=1>

QFracture® defines thresholds for patients at highest risk of fracture based on the risks of patients within the QResearch database. These are:¹²

Women	QFracture® score ≥11.1%
Men	QFracture® score ≥ 2.6%

Who should be treated with bisphosphonates to reduce their fracture risk?

NICE TA464, NICE CG146 and NICE QS149/NOGG 2017 need to be used together to determine whether a patient with osteoporosis may be prescribed an oral or intravenous bisphosphonate to reduce their fracture risk.¹⁻⁴ A patient information leaflet can help patients understand the benefits and harms of bisphosphonate treatment (attachment 2).

Patients with a low risk of fracture do not require bisphosphonate treatment. They should be given reassurance, lifestyle advice and reassessed in five years or less.⁴ Provide a patient information leaflet on osteoporosis (attachment 1).

High risk patients can be considered for treatment without the need for BMD. BMD measurement may be appropriate in high-risk younger postmenopausal women.⁴

Patients with an intermediate risk of fracture should have their BMD measured and the FRAX® score recalculated to determine whether the fracture risk is above the intervention threshold set out in table 3.

Table 3. Intermediate risk patients - intervention thresholds³

10-year probability of a major osteoporotic fracture (%) derived from FRAX® (BMI set to 25kg/m ²)	
Age (years)	Intervention threshold %
40	5.9
45	6.0
50	7.2
55	9.4
60	12
65	16
≥70	20

Tables 4 and 5 summarise when oral or intravenous bisphosphonates may be offered.

Table 4. Patients who may be considered for or offered an oral bisphosphonate to reduce their fracture risk¹⁻⁴

- High risk patients
- Intermediate risk patients whose recalculated fracture risk is above the intervention threshold set out in table 3

Table 5. Patients who may be offered an intravenous bisphosphonate to reduce their fracture risk^{1,3,4}

- Men and women with a 10-year probability of major osteoporotic fracture derived from FRAX® or QFracture® ≥10%
- Patients who received an oral bisphosphonate (as outlined in Table 4) who have difficulty taking oral bisphosphonates (alendronic acid, ibandronic acid or risedronate sodium) or they are contraindicated or not tolerated

The SIGN guidelines on the management of osteoporosis and the prevention of fragility fractures recommend a 10-year fracture risk of ≥10% triggers the need for a DXA scan. If osteoporosis is confirmed by DXA then drug treatment is offered.¹³ QFracture® is the risk assessment tool that is preferred by SIGN. The SIGN guidelines are currently being updated.

Bisphosphonate treatment duration and review

Guidance on review periods for assessing the continued need for a bisphosphonate is found in the NICE QS149/NOGG 2017/NG56 publications and the Summary of Product Characteristics (SPCs) for bisphosphonates.^{3,4,9,14-30} The recommendations are for between three and five years, but they do differ depending on the reference used.

The NICE QS149 and NOGG 2017 recommend that bisphosphonate treatment be reviewed after five years with alendronate, risedronate or ibandronate and three years with zoledronic acid.^{3,4}

The Summary of Product Characteristics (SPCs) for the products advise that the continued need for treatment be re-evaluated periodically based on the benefits and potential risk on an individual patient basis, particularly after five or more years of use.¹⁴⁻³⁰

NG56 recommends reviewing bisphosphonate treatment after three years in patients with multi-morbidity.⁹ The recommendations are to:

- Tell a person who has been taking a bisphosphonate for osteoporosis for at least three years that there is no consistent evidence of:
 - » Further benefit from continuing bisphosphonate for another three years
 - » Harms from stopping bisphosphonate after three years of treatment.
- Discuss stopping bisphosphonate after three years and include patient choice, fracture risk and life expectancy in the discussion.

There is currently no evidence to support continued prescribing beyond ten years of bisphosphonate treatment in osteoporosis in females and no evidence on which to base recommendations for men. There is no evidence that skeletal metabolism in men differs fundamentally from that of women.⁴ A pragmatic approach would therefore be to review men at the same intervals as women.

Based on these considerations, the following treatment review periods for discussing the continued need for treatment, stopping treatment, or a treatment break are recommended for adult men and women:

- Three years for patients with multimorbidity (two or more long-term conditions) on oral or intravenous bisphosphonates
- Three years for zoledronic acid
- Five years for alendronic acid, risedronate and ibandronic acid for patients without multimorbidity (two or more long-term conditions)
- Ten year review of the continued need for a bisphosphonate for all patients as there is no evidence to support prescribing beyond ten years.

Who should continue with treatment?

NOGG 2017 recommends bisphosphonate continuation for up to ten years after the initial three to five years of treatment in the following high risk patients:⁴

- Age >75 years
- Previous history of hip or vertebral fracture
- ≥ 1 low trauma fracture(s) during treatment (exclude poor adherence and secondary osteoporosis causes)
- Taking oral glucocorticoids ≥ 7.5 mg prednisolone/day or equivalent
- DXA scan post treatment hip BMD T-score < -2.5

After ten years of continued treatment, there is currently no evidence to support prescribing. All patients on bisphosphonate treatment for ≥ 10 years should be reviewed for the continued need for treatment on an individual basis.⁴

Stopping bisphosphonate treatment

Decision support aids should be used when discussing stopping treatment with a patient. The decision support aid on bisphosphonates for treating osteoporosis produced by NICE helps to explain to patients about the benefits and harms of treatment and is available here:³¹ <https://www.nice.org.uk/guidance/ta464/resources/decision-support-fromnice-information-to-help-people-with-osteoporosis-and-their-health-professionalsdiscuss-theoptions-pdf-4608867565>

NG56 advises to discuss stopping bisphosphonates after three years in patients with two or more long-term conditions and to include patient choice, fracture risk and life expectancy in the discussion.⁹ These patients should be informed that there is no consistent evidence of further benefit from continuing bisphosphonates for another three years or harms from stopping bisphosphonates after three years of treatment.

A bisphosphonate can be stopped in patients with a T-score >-2.5 at their treatment review period. The BMD and fracture risk should be reassessed after two years.³

There is no evidence to support continued prescribing beyond ten years of bisphosphonate treatment in osteoporosis in women and men.⁴ When reviewing whether to stop, recommence, or continue treatment with a bisphosphonate balancing the potential risks of continued treatment with the benefits for the patient is necessary.

When the decision to stop therapy has been made, bisphosphonates can be stopped immediately without the need to taper treatment because of their lasting therapeutic effects after treatment is stopped.³²

Bisphosphonate treatment breaks

Bisphosphonate treatment breaks have been suggested due to concerns over rare but serious adverse effects of atypical femoral fractures, osteonecrosis of the jaw or external auditory canal.⁵⁻⁸ The risk of atypical femoral fractures increases with bisphosphonate treatment duration. There is some evidence that patients can benefit from a treatment break as their therapeutic effects last for some time after stopping treatment. Each bisphosphonate has a different binding affinity for hydroxyapatite and human bone tissue as follows:³³

- One to two years for risedronate sodium and ibandronic acid
- Two to three years for alendronic acid
- Three years for zoledronic acid

Guidance on bisphosphonate treatment break length can be found in NICE QS149 and NOGG 2017.^{3,4} The recommended treatment break is between eighteen months and three years, but no specific time period is suggested for each drug. Pragmatic treatment break lengths for each drug, using information from the drug binding affinity and NICE QS149 and NOGG 2017 recommended treatment break length, are:

- Eighteen months for risedronate sodium
- Two years for alendronic acid and ibandronic acid
- Three years for zoledronic acid

A bisphosphonate treatment break should be discussed during the treatment review. The need for recommencing the bisphosphonate is reassessed at the end of the treatment break or sooner if there is a new fracture at any time during the treatment break.

When the decision to stop a bisphosphonate has been agreed with the patient, they can be stopped immediately.³²

Quality and Outcomes Framework (QOF) reporting

The Quality and Outcomes Framework (QOF) 2018/19 points were available for keeping a register of patients with a history of fragility fracture and for being treated with an appropriate bone-sparing agent.³⁴ Osteoporosis has been removed from QOF for 2019/20.

Algorithm for long-term bisphosphonate management

Attachment 3 contains a bisphosphonate treatment in osteoporosis algorithm which supports long-term treatment decision making. It also provides an overview of who to treat with bisphosphonates, when to review treatment, treatment breaks and stopping bisphosphonates.

The NOGG 2017 guidelines provided an algorithm for the long-term treatment and monitoring of bisphosphonates, which is available at <https://www.sheffield.ac.uk/NOGG/NOGG%20Guideline%202017.pdf> This may be as a useful resource when reviewing bisphosphonate treatment.

Recommencing bisphosphonates after a treatment break

FRAX® scores and femoral neck BMD are used to assess the fracture risk after a treatment break. The NICE QS149/NOGG 2017 intervention thresholds should be applied to aid the decision whether to re-commence treatment or not after the treatment break.^{3,4} Refer to tables 2, 3 and 4. Provide the patient with a patient information leaflet (attachment 2) and/or the NICE decision support leaflet for bisphosphonates for treating osteoporosis to help with shared decision making.³¹

Clinical scenarios

The following clinical scenarios for prescribed bisphosphonates may help to illustrate who to treat, when to offer a treatment break, restarting bisphosphonate after a treatment break and stopping treatment completely. These are shown in table 6.

Table 6: Prescribed bisphosphonate clinical scenarios

Clinical scenario	Treatment review considerations
<p>60-year-old woman</p> <ul style="list-style-type: none"> » Menopause at age 52 years » No risk factors » FRAX® 6.3% » T-score -1.5 » Alendronic acid for five years 	<ul style="list-style-type: none"> • Not originally eligible for fracture risk assessment • FRAX® - intermediate risk and intervention threshold not met, bisphosphonate not needed • Five years treatment with alendronic acid • Use NICE decision aid to discuss stopping bisphosphonate • Re-assess if there is a new fracture • Provide patient information leaflet on bisphosphonates in osteoporosis
<p>70-year old man</p> <ul style="list-style-type: none"> » Smoker » Alendronic acid for five years » FRAX® 5.6% 	<ul style="list-style-type: none"> • Eligible for fracture risk assessment • FRAX® - low risk, bisphosphonate not needed • Five years treatment with alendronic acid • Use NICE decision aid to discuss stopping bisphosphonate • Re-assess if there is a new fracture • Provide patient information leaflet on bisphosphonates in osteoporosis

Clinical scenario	Treatment review considerations
69-year old woman <ul style="list-style-type: none"> » COPD » Diabetes » Previous fragility fracture » Alendronic acid for three years » FRAX® 21% 	<ul style="list-style-type: none"> • Originally eligible for fracture risk assessment • FRAX® - intermediate risk • Multimorbidity NG56 applies • Three years treatment with alendronic acid • Use NICE decision aid to discuss stopping bisphosphonate. Consider patient choice, fracture risk and life expectancy • Provide patient information leaflet on bisphosphonates in osteoporosis • Re-assess if there is a new fracture
85-year-old woman <ul style="list-style-type: none"> » Previous hip fracture » Zoledronic acid for three years » FRAX® 35% 	<ul style="list-style-type: none"> • Originally eligible for fracture risk assessment • FRAX® - high risk and IV bisphosphonate treatment justified • Use NICE decision aid to discuss continuing zoledronic acid for a further three years then reassess • Provide patient information leaflet on bisphosphonates in osteoporosis

Cost-effective bisphosphonate choices

NICE TA464 recommends that bisphosphonate treatment choice should be made through shared decision making after considering the advantages and disadvantages of the treatments available. Using the least expensive generic formulation, factoring in the drug administration costs, dose needed and cost per dose is also recommended. The availability of generic oral bisphosphonates has lowered the monthly cost of treating osteoporosis.¹

Appendix 1 shows the costs and licensed indications of generic and branded oral and intravenous bisphosphonates.^{14-30,32,35} Table 7 below lists the four least costly bisphosphonate options in ascending order.

Table 7: Least costly bisphosphonate options

Route	Bisphosphonate preparation	Three year total cost	Five year total cost
Oral	Generic alendronic acid 70mg tablets once weekly	£24.96	£41.60
	Generic risedronate sodium tablets 35mg once weekly	£31.68	£52.80
	Ibandronic acid 150mg tablets once a month	£37.80	£63
Intravenous	Generic zoledronic acid 5mg in 100ml infusion once a year	£540*	£900*

*Infusion administration costs not included

Annually £8.4 million is spent on bisphosphonates for osteoporosis in England and Wales (ePACT2 Sep - Nov 18). Although most bisphosphonates are prescribed as generics, savings can still be made by switching away from more expensive products, such as branded versions, effervescent tablets and oral solutions. £2.3 million was spent on branded bisphosphonates, effervescent tablets and oral solutions in England and Wales (ePACT2 Sep - Nov 18). Switching 80% of prescriptions from these products to generic alendronic acid 70mg tablets once weekly **would provide cost savings of an estimated**

£1.6 million annually in England and Wales. This equates to £2,492 per 100,000 patients. Further savings and benefits to patients could be made by appropriately introducing bisphosphonate treatment breaks and appropriately stopping treatment. Savings made can be used to fund new patients identified for treatment or referred from the local Fracture Liaison Service.

Prescriptions for the following products should be reviewed for potentially switching to less costly options in discussion with the patient:

- Brand name prescriptions
- Intravenous formulations
- Oral solution/effervescent tablet formulations.

Audit

The PRIMIS osteoporosis quality improvement tool can be used to produce lists of patients who require a bisphosphonate treatment review based on the number of years of continuous treatment.³⁶ The tool also provides information on where clinical coding can be improved. The tool is free to use by GP practices in England and is available on this link (registration required): <https://www.nottingham.ac.uk/primis/tools/qi-tools/osteoporosis.aspx>

An audit template is also available to support a bisphosphonate in osteoporosis cost-effectiveness review (Attachment 4). The audit is divided into three sections aiming to answer the following questions:

- Is bisphosphonate treatment justified?
- Is bisphosphonate treatment cost-effective?
- What is the appropriate bisphosphonate treatment review period and outcome?

The full audit may be undertaken or selected parts of the audit. The audit may also be adapted according to local need.

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Additional PrescQIPP resources

Additional resources available:		Bulletin	https://www.prescqipp.info/our-resources/bulletins/bulletin-231-bisphosphonate-treatment-for-osteoporosis/
		Implementation resources	
		Data pack	https://pdata.uk/#/views/B231_Bisphosphonate-treatmentforosteoporosis/FrontPage?iid=1

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Information compiled by Karen Homan, PrescQIPP CIC and reviewed by Katie Smith, Director of Clinical Quality, PrescQIPP CIC, February 2019. Non-subscriber publication June 2019.

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Appendix 1. Comparative costs and licensed use of bisphosphonate preparations^{32,35}

Product	Brand/ generic	Indication	Cost		
			28 days	3 years	5 years
Alendronic acid 10mg tablets once a day ³	Generic	<ul style="list-style-type: none"> • Treating postmenopausal osteoporosis • Prophylaxis of glucocorticoid-induced osteoporosis • Treating osteoporosis in men at increased risk of fracture 	£1.47	-	£96
Alendronic acid 70mg tablets once weekly ⁴	Generic	<ul style="list-style-type: none"> • Treating postmenopausal osteoporosis 	£0.76	-	£50
Fosamax® (alendronic acid) once weekly tablets 70mg ⁵	Brand	<ul style="list-style-type: none"> • Treating postmenopausal osteoporosis 	£22.80	-	£1,482
Binosto® (alendronic acid) effervescent tablet 70mg sugar free ⁶	Brand	<ul style="list-style-type: none"> • Treating postmenopausal osteoporosis 	£22.80	-	£1,482
Alendronic acid oral solution 70mg/100ml once a week ⁷	Generic - unlicensed special	<ul style="list-style-type: none"> • Treating postmenopausal osteoporosis 	£28.56	-	£1,856
Alendronic acid 70mg/colecalciferol 70 microgram tablets ⁸	Generic	<ul style="list-style-type: none"> • Treating postmenopausal osteoporosis in women at risk of vitamin D insufficiency 	£24.23	-	£1,575
Fosavance® tablets ⁹	Brand	<ul style="list-style-type: none"> • Treating postmenopausal osteoporosis in women at risk of vitamin D insufficiency 	£22.80	-	£1,482
Ibandronic acid 150mg tablets once a month ¹⁰	Generic	<ul style="list-style-type: none"> • Treating postmenopausal osteoporosis 	£0.99	-	£64
Bonviva® (ibandronic acid) tablets 150mg once a month ¹¹	Brand	<ul style="list-style-type: none"> • Treating postmenopausal osteoporosis 	£18.40	-	£1,104
Ibandronic acid 3mg injection once every three months ¹²	Generic	<ul style="list-style-type: none"> • Treating postmenopausal osteoporosis 	£21.47	-	£1,308
Bonviva® (ibandronic acid) injection 3mg every three months ¹³	Brand	<ul style="list-style-type: none"> • Treating postmenopausal osteoporosis 	£22.88	-	£1,373

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Product	Brand/ generic	Indication	Cost		
			28 days	3 years	5 years
Risedronate sodium 5mg tablets once daily ¹⁴	Generic	<ul style="list-style-type: none"> Treating postmenopausal osteoporosis to reduce risk of vertebral or hip fractures Preventing osteoporosis (including corticosteroid-induced osteoporosis) in postmenopausal women 	£18.85	-	£1,131
Actonel® (risedronate sodium) 5mg daily ¹⁵	Brand	<ul style="list-style-type: none"> Treating postmenopausal osteoporosis to reduce risk of vertebral or hip fractures Preventing osteoporosis (including corticosteroid-induced osteoporosis) in postmenopausal women 	£17.99	-	£1,079
Risedronate sodium 35mg tablets once weekly ¹⁶	Generic	<ul style="list-style-type: none"> Treating postmenopausal osteoporosis to reduce risk of vertebral or hip fractures Treating osteoporosis in men at high risk of fractures 	£0.76	-	£49
Actonel® (risedronate sodium) once a week tablets 35mg ¹⁷	Brand	<ul style="list-style-type: none"> Treating postmenopausal osteoporosis to reduce risk of vertebral or hip fractures Treating osteoporosis in men at high risk of fractures 	£19.12	-	£1,147
Zoledronic acid 5mg in 100ml infusion (Dr Reddy's Laboratories (UK) Ltd) once a year ¹⁸	Generic	<ul style="list-style-type: none"> Treating postmenopausal osteoporosis and osteoporosis in men (including corticosteroid-induced osteoporosis) *Infusion administration costs not included 	£21.13*	£760.74	£1,268
Aclasta® (zoledronic acid) 5mg/100ml infusion bottles once a year ¹	Brand	<ul style="list-style-type: none"> Treating postmenopausal osteoporosis and osteoporosis in men (including corticosteroid-induced osteoporosis) *Infusion administration costs not included 	£21.12*	£760.14	£1,267

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