# Guidance for Bisphosphonate prescribing reviews inc. treatment length

[**NICE Quality Standard 149**](https://www.nice.org.uk/guidance/qs149/) **- Osteoporosis (April 2017)** recommends that those on long term bisphosphonate therapy (adults who have been taking zoledronic acid for 3 years or alendronate, ibandronate or risendronate for 5 years) should have a review of their need for continuing treatment.

The risk-benefit balance of bisphosphonate therapy after the initial treatment of 3-4 years is unclear, and concerns over rare adverse effects of long term use, particularly osteonecrosis of the jaw and atypical femoral fractures have raised questions about optimal duration of therapy.

As bisphosphonates are retained in the bone for some time after treatment cessation, some patients may benefit from a period of off treatment (or ‘drug holiday’). This will not be suitable for all patients, so the below algorithm has been compiled to assist clinicians.

The algorithm broadly follows the advice laid out by the [**National Osteoporosis Guideline Groups (NOGG) clinical guideline**](https://www.sheffield.ac.uk/NOGG/downloads.html) on the prevention and treatment of osteoporosis (March 2017)

The main recommendations are as follows:

* Review on-going need every 3-5 years.
* Review should include:
  + Asking about adverse effects (e.g. gastrointestinal, potential fractures, dental issues)
  + Ask about adherence, including recommended method of taking the treatmentwhichis a common issue with this class of medicine, with less than half of people starting oral bisphosphonates choosing to continue for more than a year. Take the time to identify any issues this may be causing and try to address these. Occurrence of low trauma fracture while ‘taking’ a bisphosphonate may be attributable to poor concordance (e.g. less than 80% of treatment has been taken), rather than pharmacological ineffectiveness.
  + Discuss alternative treatment options if adverse effects or adherence are a problem
* Patients at high risk of fracture should continue treatment.
* Patients at low risk of fracture should be assessed for the appropriateness of continued bisphosphonate therapy by assessing Bone Mass Density (BMD) with a DXA scan, and the [FRAX® tool](https://www.sheffield.ac.uk/FRAX/tool.aspx?country=1).
* Base decision regarding continuing treatment on an individual assessment of risks and benefits, following an informed discussion, fully involving the patient.
* Calcium and vitamin D should be continued lifelong for patients with osteoporosis who have low dietary calcium intake and/or are at risk of vitamin D deficiency.
* Those on very long term treatment (≥10 years) should be judged on a case by case basis, but there is no evidence of benefit beyond this time.

# Bisphosphonate Review Algorithm

\*3 years for Zoledronic acid, 5 years for other bisphosphonates.

Bisphosphonate review after 3-5 years\* treatment, or following fracture/change in risk factors.

T-score > -2.5

T-score ≤-2.5

High risk (Red)

Arrange a DXA scan

Low risk (Green)

Consider drug holiday. Re-assess in 2 years, or if new fracture.

Calculate 10yr fracture risk with [FRAX® tool.](https://www.sheffield.ac.uk/FRAX/tool.aspx?country=1)

\*\*If treatment over 10 years, see notes below

Past hip/spine fracture, or fragility fracture whilst on treatment.

NO

YES

Exclude 2⁰ary causes

Review treatment choice if appropriate\*\*

Age > 75 years old **OR** current oral steroid ≥7.5mg prednisolone /day (or equivalent)

NO

YES

Check Adherence

Continue treatment. Review in 3-5 years or following a change in risk factors

**Additional information - Reviewing treatment**

Care should also be taken to exclude any **secondary causes** of osteoporotic fractures. Once identified, these can be appropriately treated and risk of fracture re-assessed. Common secondary causes include:

* High alcohol intake
* Smoking
* Rheumatoid arthritis
* Prolonged immobility
* Endocrine disorders (including diabetes and hyperthyroidism)
* COPD
* Inflammatory Bowel Disease

**Calcium and vitamin D** should be continued lifelong for all patients with osteoporosis if dietary intake is insufficient, and should not stop if there is a decision to take a treatment holiday.

**Bisphosphonates** have a profound effect on bone metabolism. Currently the evidence points to bones becoming denser for the first 3 years of use, and then reaching a plateau. The bisphosphonate may then remain in the bone for over 10 years, where they inhibit bone turnover. Though this prevents the destruction of bone associated with osteoporosis, the risk of continued use is the inhibition of osteoclast activity prevents the repair of microscopic damage, leading to long term adverse effects (e.g. atypical fractures).

Recent studies (such as the FLEX study) suggest little difference in osteoporotic fracture rate in most patients treated for over 5 years, than those stopped at this time.

For patients treated for over 10 years with bisphosphonate, there is no evidence on which to base a recommendation, but the information above suggests many will not receive additional benefit by continuing. It is important to review each patient on a case by case basis.

It is also important to note, the decision to stop treatment should not be considered final, and risk should be assessed again following the algorithm, with treatment restarted if indicated.

**References**

1. NICE Clinical Guidance 146 – Osteoporosis: assessing the risk of fragility fracture. Updated Feb 2017. (<https://www.nice.org.uk/guidance/cg146/chapter/1-Guidance>)
2. NOGG 2017: Clinical guideline for the prevention and treatment of osteoporosis. March 2017. (<https://www.sheffield.ac.uk/NOGG/downloads.html>)
3. NICE Quality Standard 149 – Osteoporosis. April 2017. (<https://www.nice.org.uk/guidance/qs149/>)
4. SIGN 142 – Management of Osteoporosis and the prevention of fragility fractures. March 2015. (<http://www.sign.ac.uk/assets/sign142.pdf>)
5. Black DM, Schwartz AV, et al. Effects of continuing or stopping alendronate after 5 years of treatment. FLEX trial. JAMA 2006;296(24):2927-38
6. GP Update (Red Whale) – Osteoporosis. April 2016. (<https://www.gp-update.co.uk/files/docs/Osteoporosis.pdf>)