GP to review all patients taking a Bisphosphonate
[3yrs for zoledronate (hospital only); 5yrs for other bisphosphonates]

Has patient suffered a fragility fracture on treatment?
(Hip/vertebral/multiple fragility fracture)

NO

DOES PATIENT HAVE A “HIGH RISK” INDICATOR?
- Patient ≥ 75 years with frequent falls
- Previous hip or vertebral fracture
- Taking continuous oral glucocorticoid
- Taking an aromatase inhibitor e.g. Letrozole (Femara®), Anastrozole (Arimidex®) and Exemestane (Aromasin®)
- Taking a gonadotropin-releasing hormone (GnRH) agonist e.g. Leuprorelin acetate (Prostap ® SR or 3) and Goserelin (Zoladex® or LA)
- Taking an anti-epileptic drug e.g. phenytoin (Epanutin), carbamazepine (Tegretol), primidone (Mysoline) and sodium valproate (Epilim)

YES

GP TO CHECK COMPLIANCE
If good compliance then continue bisphosphonate treatment
If poor compliance then discuss with patient. May require referral to the Osteoporosis Clinic (SGH).

NO

PATIENTS <75yrs
1. Complete DXA to obtain T-scores
2. Use T-score for femoral neck BMD (g/cm²) to calculate FRAX® score for patient
3. Follow green or red outcome measure

PATIENTS >75yrs
1. Calculate FRAX® score® (T-score not required as patient is >75yrs),
2. Follow green, amber or red outcome measure

HIGH RISK PATIENTS
If patient total hip or femoral neck DXA T-score is < -2.5 or
If patient FRAX score is in the “red zone” then “GP TO CHECK COMPLIANCE” above

INTERMEDIATE RISK PATIENTS
Does patient have a new independent clinical risk factor or an indicator of low BMD?
- Clinical Risk factors
  - Parental history of hip fracture
  - Alcohol intake (≥4 units per day)
  - Rheumatoid Arthritis
- Indicators of Low Bone Mineral Density (BMD)
  - Low body mass index (BMI) ≤ 19kg/m²
  - Ankylosing spondylitis
  - Immobilisation
  - Long term smoking

Follow “yes” or “no” arrow

LOW RISK PATIENTS
If patient total hip or femoral neck DXA T-score is > -2.5
or
If patient FRAX score is in the “green zone” then patient to take a “Drug Holiday”.

Repeat FRAX® and DXA scan after “drug holiday” (No DXA scan required >75yrs)

PATIENT TO TAKE A “DRUG HOLIDAY”
- Alendronate 2yrs
- Risedronate 1yr
- Zolendronate 3yrs

[Patient to continue adequate intake of calcium and vitamin D during drug holiday]

GP TO CHECK COMPLIANCE
If good compliance then consider treatment failure. Refer patient to the Osteoporosis Clinic (SGH) to consider switching to a drug with different mode of action e.g. S/C Denosumab 60mg
If poor compliance then discuss with patient. May require referral to the Osteoporosis Clinic (SGH).

PLUS
- Check calcium and vitamin D intake (including OTC)
- Exclude secondary causes, NOGG
- Advise patient to report any thigh, hip or groin pain which may be indicative of an atypical femoral fracture
- Patients to maintain good oral hygiene, receive routine dental check-ups, and report any oral symptoms.
Bisphosphonates

Bisphosphonates are widely prescribed for the treatment of osteoporosis. They have a high affinity for bone and reduce bone resorption and increase bone mineral density (BMD) by altering osteoclast activation and function. Bisphosphonates have a long half-life in bones and their anti-fracture efficacy continues for some years after stopping.

[Drugs: alendronate, risedronate, ibandronate and zoledronate]

Long term use and possible side effects

Long term use of oral bisphosphonates is not without its risks. This is related to accumulation of the bisphosphonate in bone, reducing bone turnover and ultimately decreasing healing. This has resulted in two identified clinical syndromes Osteonecrosis of the Jaw (ONJ) and Atypical Femur Fractures (AFF).

Optimal duration

The optimal duration of bisphosphonate treatment for osteoporosis has not been established. Treatment should be re-evaluated periodically based on the benefit and potential risks on an individual patient basis, particularly after 5 or more years of use.

FRAX® has been validated as an effective means of reassessment of fracture risk in treated individuals with osteoporosis. Patients should be re-evaluated using FRAX® possibly informed by a repeat DXA scan to calculate an individual’s risk. This may be used alongside National Osteoporosis Guideline Group (NOGG) intervention thresholds to guide the decision as to whether treatment can be stopped for a period of time.

QFRACTURE® is an alternative tool which estimates the 10 year absolute risk of osteoporotic fractures and hip fractures in men and women. It doesn’t require laboratory testing or clinical measurement (e.g. a DXA scan) and takes into account additional clinical risk factors in comparison to FRAX.

Treatment should be discontinued, for low risk patients. After review, treatment may be recommenced one to three years later if still indicated. In those patients who remain at high risk of fracture, treatment should be continued. Treatment may continue for up to 10yrs (NOGG) for high risk cases.

*http://www.qfracture.org/

Drug holiday

The risks identified with longer-term bisphosphonate use have led to the concept of a “drug holiday” in treatments. A drug holiday should be viewed as a temporary, suspension of active therapy. Due to the long half-life of bisphosphonates, the persistence of the anti-resorptive effects is expected for an undefined period of time.

If treatment is stopped, fracture risk should be reassessed after a new fracture regardless of when this occurs and/or after “drug holiday” (see below)

- Alendronate 2yrs
- Risedronate 1yr
- Zoledronate 3yrs

Secondary causes of osteoporosis (NOGG)

- Rheumatoid arthritis
- Untreated hypogonadism in men and women
- Prolonged immobility
- Organ transplantation
- Type I diabetes
- Hyperthyroidism
- Gastrointestinal disease
- Chronic liver disease
- Chronic obstructive pulmonary disease

References


Contact details

<table>
<thead>
<tr>
<th>Contact details</th>
<th>Email address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Katie Moss (Consultant Rheumatologist, St. George’s Hospital)</td>
<td><a href="mailto:Katie.Moss@stgeorges.nhs.uk">Katie.Moss@stgeorges.nhs.uk</a></td>
</tr>
<tr>
<td>Mohammed Swaleh (Integrated Falls and Bone Health Pharmacist, St. George’s Hospital)</td>
<td><a href="mailto:Mohammed.Swaleh@stgeorges.nhs.uk">Mohammed.Swaleh@stgeorges.nhs.uk</a></td>
</tr>
<tr>
<td>Wandsworth CCG</td>
<td>Practice Prescribing Support Pharmacists</td>
</tr>
</tbody>
</table>

---

Mohammed Swaleh
Dr Katie Moss
Contact details
Email address

Mohammed Swaleh
DMPG/Integrated Falls and Bone Health Pharmacist
St. George’s Hospital
Katie.Moss@stgeorges.nhs.uk
Mohammed.Swaleh@stgeorges.nhs.uk
Practice Prescribing Support Pharmacists