

Communication of risk is difficult. In osteoporosis, patients often do not understand their high risk of fracture or link it to their bone health. As a consequence, take up of, and adherence to, anti-osteoporosis medication is often poor. In contrast, patients frequently over-estimate the very rare occurrence of serious side effects.

This tool has been developed by the International Osteoporosis Foundation (IOF) and the Bone Health and Osteoporosis Foundation (BHOF) to help physicians initiate conversations with their patients about osteoporosis and the risk of fracture. The aim is to facilitate communication of the balance between benefits and risks associated with commencing anti-osteoporosis medication. The tool is intended for use during a physician-patient interaction, and brief instructions pertaining to the component parts are presented below:

## How to use this tool

### Page 1:

#### Evaluation Questions Algorithm

The flow chart takes the physician and patient through the initial assessment, linking to external websites to undertake the actual fracture risk assessment and to ascertain subsequent recommendation regarding treatment. To aid assessment a list of risk factors for osteoporotic fracture (which could be ticked to demonstrate their presence to the patient) (**right panel**) is included.

#### What does my percentage risk mean? (Bottom left panel)

This provides a pictorial representation of FRAX absolute fracture risk over 10 years in percent. Either major osteoporotic fracture or hip fracture values can be used. The physician may shade the appropriate number of bones (starting bottom left) to help the patient visualise their probability of fracture. The 100 bones shown represent 100%.

Example: if FRAX major osteoporotic fracture result is 20%: shade 20 bones out of 100.

#### Risk of rare side effects with anti-resorptives (Bottom right panel)

The physician may use this panel to demonstrate, on the same absolute risk scale, the extremely low chance of experiencing a serious side effect (osteonecrosis of the jaw or atypical femoral fracture) with anti-resorptive therapy.

The figure is pre-shaded to demonstrate a 0.001% risk of either outcome, so serves as a ready-made illustration rather than requiring additional shading.

### Page 2:

#### Key messages

These are offered to facilitate discussion with the patient about the benefit of treatment. These may help the physician to reinforce that in the vast majority of cases, the benefits of anti-osteoporosis medication far outweigh any risk of side effects.

#### Relative risk reduction in fracture with anti-resorptive treatment (Bottom left panel)

The physician may use this panel to demonstrate the patient's final absolute fracture risk when treated successfully. This is most simply undertaken for the FRAX major osteoporotic fracture output, which treatment may reduce by half (relative risk reduction of 50%). The original value can be recorded on page 1 as above, shading the bones to correspond to the absolute probability over 10 years as a percentage. (One shaded bone equals 1%).

In the page 2 relative risk reduction panel, half this number of bones may be shaded to demonstrate a risk reduction of 50%.

Example: Patient's FRAX probability of major osteoporotic fracture is 20%. Their expected fracture probability on treatment is 50% lower (i.e. reduced by half) and so is 10%. 10 bones are thus shaded. This approach may be taken for hip fracture since this output is directly available from FRAX and in which case the output can be reduced by 40% (i.e. multiplied by 0.6) to reflect the 40% relative risk reduction in hip fracture with treatment.

Illustrative examples of fracture relative risk reduction for spine, hip and other fractures are given.

**Other panels:** provide the physician with communication resources covering:

- common side effects
- infrequent side effects
- consequences of a fracture

We hope that this tool is helpful in communicating to your patients the balance of benefits and risks in the use of anti-osteoporosis medications!