**Which FRAX*plus* adjustments are appropriate?**

The objective of FRAXplus is to adjust fracture probabilities from information contributing to fracture risk that is currently not accounted for in FRAX itself. The adjustments currently include dose of glucocorticoid taken [1], the site and recency of a major osteoporotic fracture [2], the number of falls in the past year [3], concurrent data on lumbar spine BMD [4, 5] and trabecular bone score (TBS) [6], hip axis length [7], type 2 diabetes mellitus and its duration [8]. Adjustments for the number of prior fractures, vertebral fracture assessment (VFA) and primary hyperparathyroidism will soon be available [9, 10, 11].

Current recommendations caution the use of multiple adjustments. Adjustments are based on a narrower information base than FRAX and not as well validated in multiple cohorts as the original FRAX calculations. Where multiple adjustments are potentially feasible, the question arises which variables are the most important for a particular patient. Examples of the weight of various adjustments are given in the figure below for a woman age 70 years with a BMI of 25kg/m^2 and a T-score of -2 at the femoral neck. In many instances the adjustments are relatively small but in a proportion of cases will determine the eligibility or otherwise for treatment. In several scenarios, the impact of adjustment is large and may determine that high-risk patients are categorised at very high-risk. It is evident that multiple falls, a recent vertebral, humeral or hip fracture and low TBS carry the greatest weight. Note that weights will vary with age, sex and mix of clinical risk factors.
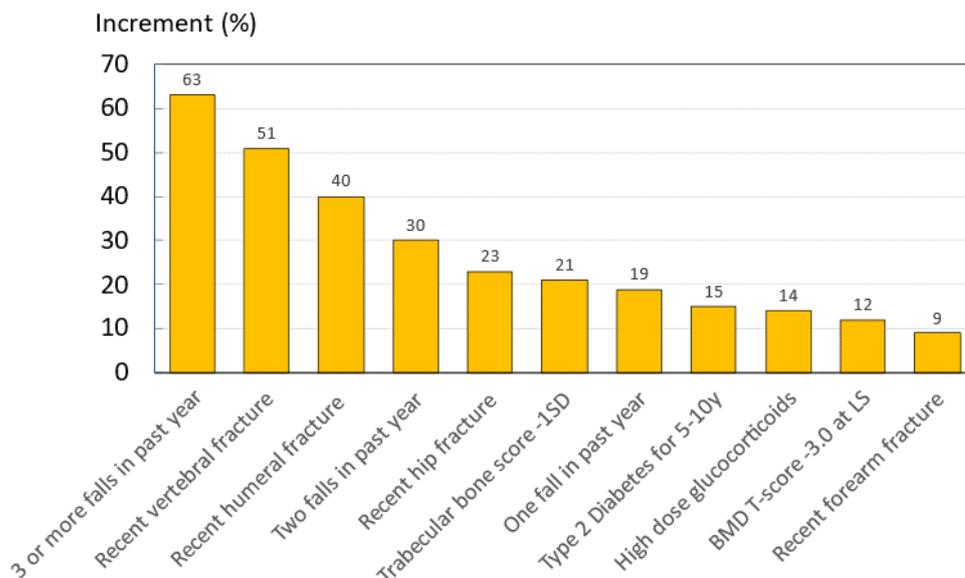
Figure. The impact of various FRAXplus adjustments for a woman age 70 years with a BMI of 25kg/m^2 and a T-score of -2 at the femoral neck. The impact is expressed as a percentage increment of fracture probability. For example, in a woman with a prior fracture and a 10-year fracture probability of 20%, this is uplifted by 51% to a probability of 30.2%.

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