

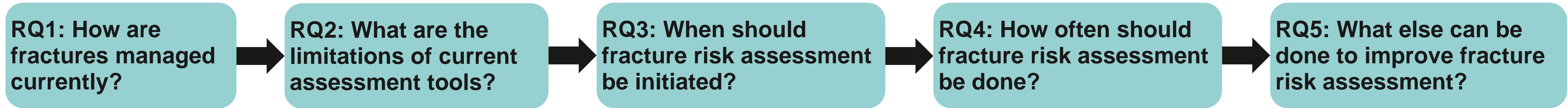
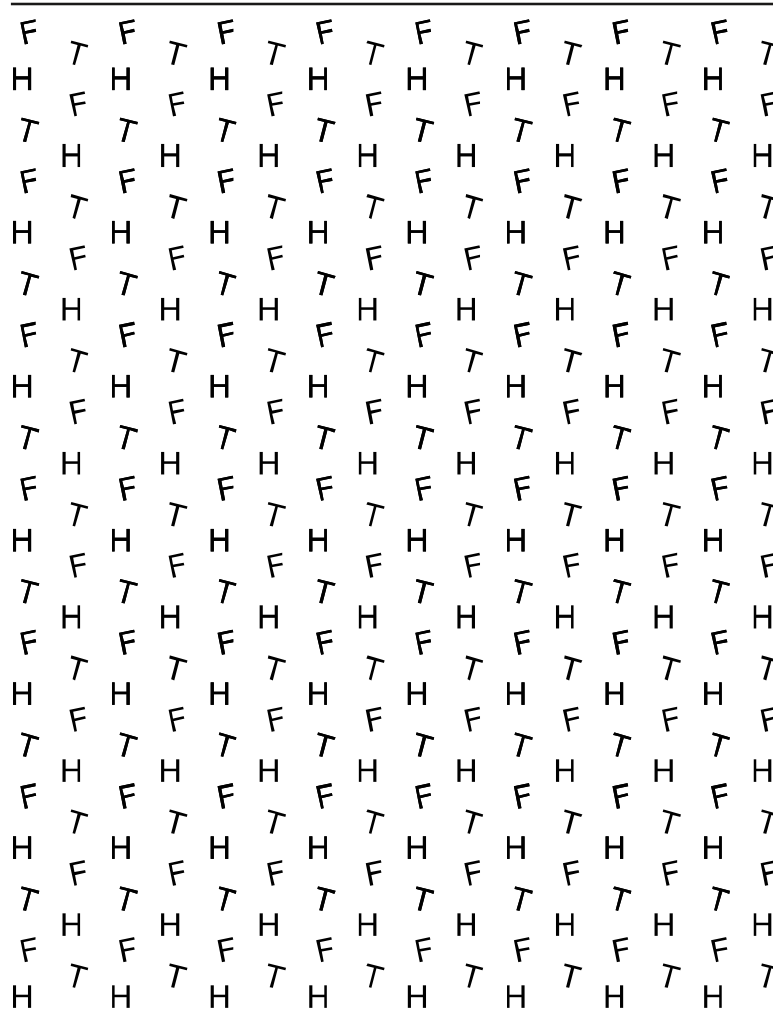
Module 1-P6: Early HTA - Justifying a novel risk assessment technology for the management of fractures in Singapore

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RQ 1 Current clinical care standard

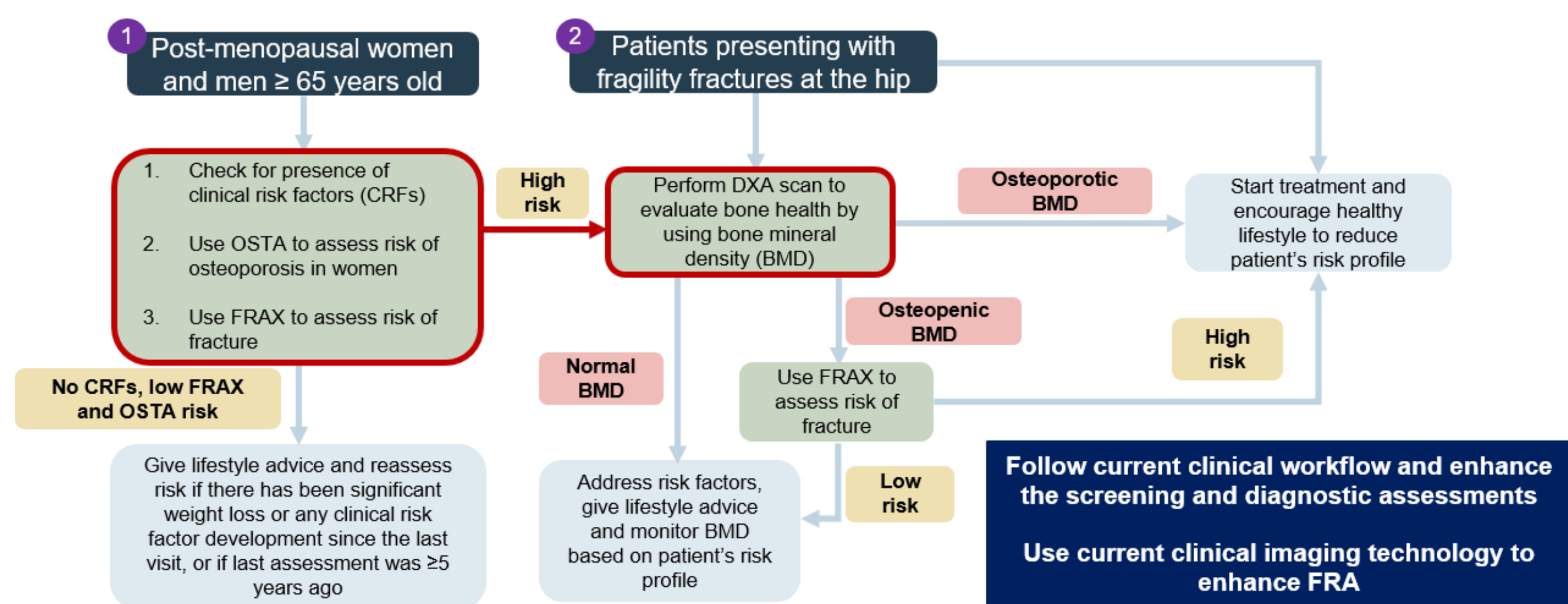


Figure 1. Current fracture management guidelines issued by MOH.

- **Target population:** Post-menopausal women and men >65 years
- **Assessment tools:** Osteoporosis Screening Tool for Asians (OSTA) and Fracture Risk Assessment Tool (FRAX)
- **Diagnostic tool:** DXA (bone density) scan

RQ 2 Limitations of FRAX in Asia

- Relevance of FRAX may be limited in Asia due to language barriers and the cultural influence on CRFs.
- Improving prediction may not be dependent on the quality/relevance of CRFs but rather on the inclusion of non-invasive bone strength estimations.
- A review to determine if FRAX is accurate for use in Asia specifically is in the pipeline.

RQ 3 Impact of fractures on refractures and mortality

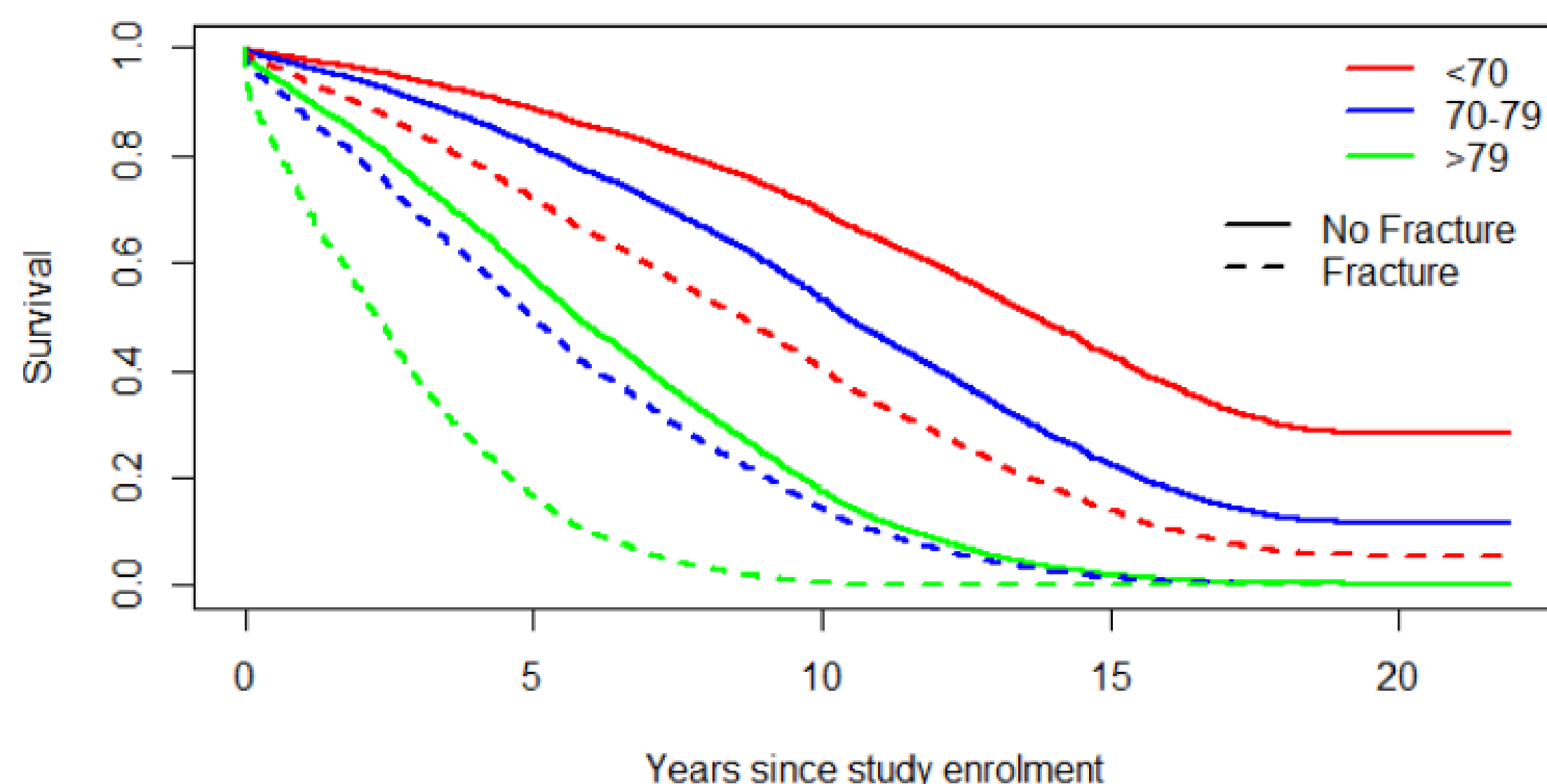


Figure 2. Multi-state model-predicted fracture-free survival probabilities for three patients with and without fracture in the 60s, 70s and 80s age categories.

- In the AGES cohort, the oldest age group (>79) has the lowest predicted survival probabilities and sustaining fractures worsens survival considerably in all age groups.
- Establishing a timeline from fracture to refracture and mortality is crucial in determining the optimal time for fracture risk screening.
- The fracture type may also influence refracture and mortality rate differently and can shed light on the most imperative fracture type to minimize in the elderly.

RQ 4 Predictive ability of the fracture risk assessment tool over multiple time points

- Optimal follow-up frequency to screen elderly to detect fractures before they are sustained is of paramount importance.
- The predictive ability of our FE-based assessment tool in identifying hip fractures will be first investigated in the AGES cohort at 0, 2, 5 and 10 years. A significant reduction in predictive ability could be indicative of a need for a follow-up assessment.
- This investigation will also be extended to the Singaporean PIONEER and TARGET cohorts to compare findings.

RQ 5 Opportunistic CT screening to assess fracture risk

- Need to cast a wider net onto populations that typically do not fall under the typical screening protocol.
- Processing CT scans obtained as part of various clinical indications comes at low cost without additional imaging or radiation exposure to the patient.
- A review to compare the discriminative ability of currently established biomarkers derived from CT scans is underway.

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