# Bone Fracture Risk Approach Plan

## Risk Characterization / Formulation

<table>
<thead>
<tr>
<th>External Deliverables</th>
<th>Risk Characterization / Formulation</th>
<th>CM Development / Evaluation</th>
<th>CM Integration/Validation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Bone Standards to OCHMO</td>
<td>BONE-101: Characterize skeletal changes on bone mass (Bone Density) and bone structure (Bone Quality) of astronauts.</td>
<td>BONE-401: Identify and test preventative and mitigating countermeasures for changes induced by spaceflight.</td>
<td>Bone to HMTA</td>
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<tr>
<td>HRR Gap: research logic description</td>
<td>Bone Microarchitecture Characterized</td>
<td>BONE-201: Identify/develop/apply tools (e.g., computational modeling or alternative) to inform the estimation bone strength and probability of overloading bones and fracture assessment.</td>
<td>Bone Monitoring Plan</td>
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<tr>
<td></td>
<td>BONE-202: Characterize bone turnover and other biochemical markers of skeletal health.</td>
<td></td>
<td>Validated Flight Countermeasure</td>
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</tbody>
</table>

**Legend:**
- Analog
- ISS
- Artemis Enabling
- External Partnerships
- TRISH
- Anticipated PRR Color Change

**Note:** Milestone (●) and Gap Closures (●) are Program reviews with defined entry/exit criteria.

**Risk Characterization / Formulation**

**CM Development / Evaluation**

**CM Integration/Validation**

**Legend:**
- Anticipated PRR Color Change