To estimate the **Potential Peak Sales** for talquetamab-tgvs (Talvey) in the indication of relapsed or refractory multiple myeloma (RRMM) in the US, EU5 (Germany, France, Italy, Spain, UK), China, and Japan, as well as the **$ value of a 1% share of treated patients**, we need to follow a structured approach based on available data, assumptions about market size, patient population, pricing, and penetration rates. Since exact data may not be publicly available for all variables, I will outline the methodology and use reasonable assumptions based on industry standards and publicly available information as of my last update (October 2023). Note that these are rough estimates and should be validated with more specific data from market research reports or company disclosures.

Step 1: Define the Target Patient Population

Talquetamab-tgvs is approved for adults with RRMM who have received at least four prior lines of therapy (often referred to as 4L+ patients). This is a heavily pre-treated population, representing a subset of the broader multiple myeloma patient pool.

Estimated RRMM 4L+ Patient Population:

- **US**: Approximately 160,000 people are living with multiple myeloma in the US. Of these, around 20-30% are in relapsed/refractory stages, and a smaller fraction (estimated 10-15% of total MM patients) are in 4L+ therapy. This translates to ~16,000-24,000 eligible patients.

- **EU5**: The prevalence of multiple myeloma in Europe is similar per capita. EU5 has a combined population of ~330 million (vs. US ~330 million), so prevalence is comparable. Adjusting for population and healthcare access, ~15,000-22,000 4L+ patients are estimated.

- **Japan**: Japan has a population of ~125 million, with a high incidence of MM due to an aging population. Estimated 4L+ patients are ~5,000-7,000.

- **China**: China has a population of ~1.4 billion, but lower diagnosis rates and access to advanced therapies. MM prevalence is lower per capita, and 4L+ patients are estimated at ~10,000-15,000 due to underdiagnosis and limited access to multiple lines of therapy.

Total Estimated 4L+ RRMM Patients:

- US: ~20,000 (midpoint)

- EU5: ~18,500 (midpoint)

- Japan: ~6,000 (midpoint)

- China: ~12,500 (midpoint)

- **Total**: ~57,000 patients

Step 2: Market Penetration (20%-30% Share of Treated Patients)

Assuming talquetamab-tgvs captures 20%-30% of treated 4L+ RRMM patients, we calculate the number of patients treated with the drug:

- **Low end (20%)**: 57,000 * 0.2 = ~11,400 patients

- **High end (30%)**: 57,000 * 0.3 = ~17,100 patients

Breakdown by Geography (using midpoint penetration of 25%):

- US: 20,000 * 0.25 = 5,000 patients

- EU5: 18,500 * 0.25 = 4,625 patients

- Japan: 6,000 * 0.25 = 1,500 patients

- China: 12,500 * 0.25 = 3,125 patients

- **Total**: ~14,250 patients

Step 3: Pricing Assumptions

Pricing for novel therapies like talquetamab-tgvs (a bispecific antibody) in RRMM is high, reflecting the innovation and limited patient pool. Pricing varies by region due to healthcare systems and purchasing power:

- **US**: Estimated annual cost per patient ~$400,000 (based on similar therapies like CAR-T and bispecifics, e.g., teclistamab).

- **EU5**: Pricing is typically 50-60% of US prices due to negotiations and health technology assessments. Estimated ~$220,000 per patient.

- **Japan**: Pricing is often aligned with EU levels or slightly higher. Estimated ~$250,000 per patient.

- **China**: Pricing is significantly lower due to affordability and government negotiations. Estimated ~$100,000 per patient.

Step 4: Calculate Potential Peak Sales

Using the above patient numbers (25% penetration) and pricing, we calculate peak sales:

- **US**: 5,000 patients * $400,000 = **$2.0 billion**

- **EU5**: 4,625 patients * $220,000 = **$1.02 billion**

- **Japan**: 1,500 patients * $250,000 = **$0.38 billion**

- **China**: 3,125 patients * $100,000 = **$0.31 billion**

- **Total Peak Sales (at 25% penetration)**: **$3.71 billion**

Range of Peak Sales:

- At 20% penetration: ~$2.96 billion

- At 30% penetration: ~$4.45 billion

Thus, **Potential Peak Sales** for talquetamab-tgvs in this indication across the specified geographies is estimated to be **$3.0 - $4.5 billion annually**.

Step 5: $ Value of 1% Share of Treated Patients

A 1% share of treated patients corresponds to 1% of the total eligible patient pool (57,000 patients) = **570 patients**.

Using the same pricing assumptions:

- **US**: (20,000 * 0.01) * $400,000 = 200 patients * $400,000 = **$80 million**

- **EU5**: (18,500 * 0.01) * $220,000 = 185 patients * $220,000 = **$41 million**

- **Japan**: (6,000 * 0.01) * $250,000 = 60 patients * $250,000 = **$15 million**

- **China**: (12,500 * 0.01) * $100,000 = 125 patients * $100,000 = **$12.5 million**

- **Total $ Value of 1% Share**: **$148.5 million**

Thus, the **$ value of a 1% share of treated patients** across these geographies is approximately **$150 million**.

Key Assumptions and Limitations

1. **Patient Population**: Estimates are based on rough prevalence and progression rates to 4L+ RRMM. Actual numbers may vary based on epidemiology data and access to prior therapies.

2. **Pricing**: Pricing assumptions are based on comparable therapies (e.g., teclistamab, CAR-T therapies like Abecma and Carvykti). Actual pricing for talquetamab-tgvs may differ.

3. **Penetration Rate**: The 20%-30% share assumes competition from other therapies (e.g., CAR-T, other bispecifics, and emerging treatments). Market dynamics and clinical outcomes will influence actual uptake.

4. **Access and Reimbursement**: Especially in China, access to high-cost therapies is limited, which may reduce treated patient numbers or pricing.

5. **Duration of Therapy**: Assumes annual cost per patient, but actual treatment duration may be shorter or longer, impacting total sales.

Final Answer

- **Potential Peak Sales** for talquetamab-tgvs in RRMM (4L+) across the US, EU5, China, and Japan (assuming 20%-30% share of treated patients): **$3.0 - $4.5 billion annually**.

- **$ Value of 1% Share of Treated Patients** across these geographies: **~$150 million**.