To estimate the **Potential Peak Sales** for pembrolizumab (Keytruda) in the specified indication across the US, EU5 (Germany, France, Italy, Spain, UK), China, and Japan, as well as the **$ value of a 1% share of treated patients** in these geographies, we need to make several assumptions and follow a structured approach. Since the specific indication is not mentioned in your query, I will assume it relates to a major approved indication for pembrolizumab (e.g., non-small cell lung cancer, NSCLC, or melanoma) and provide a general framework. If you have a specific indication in mind, please clarify.

Pembrolizumab is a blockbuster immunotherapy drug used across multiple cancer indications, and its sales are driven by factors such as patient population, market penetration, pricing, and competition. The new dosing regimen (400 mg every 6 weeks) may impact patient convenience and compliance, potentially influencing market share, but for simplicity, we will base estimates on existing data and trends.

Step 1: Key Assumptions

1. **Indication**: Assuming a major indication like NSCLC (a significant contributor to pembrolizumab sales).

2. **Market Share**: Given the query specifies a 20% to 30% share of treated patients, we will calculate peak sales for this range.

3. **Patient Population**: Estimate the number of eligible patients for treatment in each geography based on cancer incidence, prevalence, and treatment eligibility for immunotherapy.

4. **Pricing**: Pembrolizumab pricing varies by region. Approximate annual cost per patient:

- US: ~$150,000/year (based on 200 mg every 3 weeks or equivalent 400 mg every 6 weeks).

- EU5: ~$100,000/year (discounts and negotiations lower the price compared to the US).

- China: ~$50,000/year (lower pricing due to market access programs and negotiations).

- Japan: ~$120,000/year (closer to US pricing but with some discounts).

5. **Treatment Duration**: Assume an average treatment duration of 1 year per patient for peak sales calculation.

6. **Peak Sales Timing**: Assume peak sales are achieved when market penetration stabilizes (e.g., 5-7 years post-launch or post-indication approval).

Step 2: Estimate Treated Patient Population

We will estimate the number of patients eligible for pembrolizumab in a major indication like NSCLC (adjust if a different indication is intended). Incidence and treatment-eligible patients are derived from epidemiology data and market research (e.g., GlobalData, SEER, WHO).

NSCLC Eligible Patients (Approximate Annual Incidence for Advanced/Metastatic Disease Eligible for Immunotherapy):

- **US**: ~80,000 patients/year (out of ~230,000 total NSCLC cases, with ~35% advanced/metastatic and eligible for PD-1 inhibitors).

- **EU5**: ~100,000 patients/year (combined across 5 countries, based on higher population but similar eligibility rates).

- **China**: ~300,000 patients/year (higher incidence due to population size and smoking rates; ~600,000 total NSCLC cases, with ~50% eligible).

- **Japan**: ~40,000 patients/year (based on ~120,000 total NSCLC cases, with ~33% eligible).

Total eligible patients across geographies: ~520,000 patients/year.

Market Share of Treated Patients (20% to 30%):

- 20% share: 104,000 patients/year.

- 30% share: 156,000 patients/year.

Breakdown by geography (assuming proportional distribution):

- US: 20% = 16,000 patients; 30% = 24,000 patients.

- EU5: 20% = 20,000 patients; 30% = 30,000 patients.

- China: 20% = 60,000 patients; 30% = 90,000 patients.

- Japan: 20% = 8,000 patients; 30% = 12,000 patients.

Step 3: Calculate Potential Peak Sales

Peak sales = (Number of treated patients) × (Annual cost per patient).

Peak Sales at 20% Share:

- **US**: 16,000 patients × $150,000 = **$2.4 billion**.

- **EU5**: 20,000 patients × $100,000 = **$2.0 billion**.

- **China**: 60,000 patients × $50,000 = **$3.0 billion**.

- **Japan**: 8,000 patients × $120,000 = **$0.96 billion**.

- **Total at 20% Share**: $2.4B + $2.0B + $3.0B + $0.96B = **$8.36 billion**.

Peak Sales at 30% Share:

- **US**: 24,000 patients × $150,000 = **$3.6 billion**.

- **EU5**: 30,000 patients × $100,000 = **$3.0 billion**.

- **China**: 90,000 patients × $50,000 = **$4.5 billion**.

- **Japan**: 12,000 patients × $120,000 = **$1.44 billion**.

- **Total at 30% Share**: $3.6B + $3.0B + $4.5B + $1.44B = **$12.54 billion**.

Potential Peak Sales Range: **$8.36 billion to $12.54 billion** annually for the indication across these geographies, assuming a 20% to 30% share of treated patients.

Step 4: Calculate $ Value of 1% Share of Treated Patients

1% share of treated patients = 1% of total eligible patients (~520,000) = 5,200 patients/year.

Breakdown by geography:

- US: 1% = 800 patients.

- EU5: 1% = 1,000 patients.

- China: 1% = 3,000 patients.

- Japan: 1% = 400 patients.

Revenue from 1% Share:

- **US**: 800 patients × $150,000 = **$120 million**.

- **EU5**: 1,000 patients × $100,000 = **$100 million**.

- **China**: 3,000 patients × $50,000 = **$150 million**.

- **Japan**: 400 patients × $120,000 = **$48 million**.

- **Total Value of 1% Share**: $120M + $100M + $150M + $48M = **$418 million**.

Final Answer:

1. **Potential Peak Sales for Pembrolizumab** in the indication across the US, EU5, China, and Japan (assuming 20% to 30% share of treated patients):

- **$8.36 billion to $12.54 billion annually**.

2. **$ Value of 1% Share of Treated Patients** across these geographies:

- **$418 million annually**.

Notes:

- These estimates are highly dependent on the specific indication, competitive landscape (e.g., other PD-1/PD-L1 inhibitors like nivolumab, atezolizumab), reimbursement policies, and market access.

- Pricing and patient numbers are approximate and may vary based on real-world data, indication-specific eligibility, and regional healthcare systems.

- The new dosing regimen (400 mg every 6 weeks) is unlikely to significantly alter pricing per patient since it is equivalent to the 200 mg every 3 weeks dose in terms of total drug administered over time.

- If you have a specific indication or additional data (e.g., exact patient numbers or pricing), I can refine the calculations. Please provide further details if needed.