To estimate the **Potential Peak Sales** for fam-trastuzumab deruxtecan-nxki (Enhertu) in the specified indication (unresectable or metastatic HER2-positive breast cancer) in 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 follow a structured approach based on epidemiology, market size, pricing, and penetration assumptions. Since exact data may not be publicly available, I will outline the methodology and provide reasonable estimates based on typical market dynamics for oncology drugs, particularly for HER2-positive breast cancer.

Step 1: Define the Target Population

The indication is for adult patients with **unresectable or metastatic HER2-positive breast cancer** who have received a prior anti-HER2-based regimen. HER2-positive breast cancer accounts for approximately **15-20% of all breast cancer cases**.

1. **Epidemiology of Breast Cancer**:

- **US**: ~290,000 new breast cancer cases annually (2023 estimate). ~15-20% are HER2-positive (~43,500–58,000 cases). Of these, ~30-50% are metastatic or unresectable at diagnosis or progress to this stage (~13,000–29,000 eligible patients).

- **EU5**: ~370,000 new breast cancer cases annually. HER2-positive: ~55,500–74,000. Metastatic/unresectable: ~16,500–37,000 eligible patients.

- **China**: ~420,000 new breast cancer cases annually. HER2-positive: ~63,000–84,000. Metastatic/unresectable: ~19,000–42,000 eligible patients.

- **Japan**: ~95,000 new breast cancer cases annually. HER2-positive: ~14,250–19,000. Metastatic/unresectable: ~4,300–9,500 eligible patients.

Total eligible patients across geographies (mid-range estimate):

- US: ~21,000

- EU5: ~26,750

- China: ~30,500

- Japan: ~6,900

- **Total: ~85,150 patients**

2. **Treated Population**:

Not all eligible patients receive treatment due to access, cost, or clinical decisions. Assuming a **treatment rate of 70-80%**:

- US: ~14,700–16,800

- EU5: ~18,700–21,400

- China: ~21,350–24,400

- Japan: ~4,800–5,500

- **Total Treated: ~59,550–68,100 (midpoint: ~63,825)**

3. **Market Share Assumption**:

The problem assumes a **20-30% share of treated patients** for Enhertu. Using the midpoint of 25%:

- Total patients treated with Enhertu: ~15,956 patients (25% of 63,825).

Step 2: Estimate Annual Cost of Treatment

Enhertu is a high-cost oncology drug. Pricing varies by geography due to healthcare systems and negotiations:

- **US**: Annual cost ~$180,000–$200,000 per patient (based on list price and typical treatment duration of ~12 months).

- **EU5**: Annual cost ~$100,000–$120,000 per patient (discounted due to payer negotiations).

- **Japan**: Annual cost ~$120,000–$140,000 per patient.

- **China**: Annual cost ~$50,000–$70,000 per patient (lower due to pricing controls and market access challenges).

Using midpoint estimates:

- US: $190,000

- EU5: $110,000

- China: $60,000

- Japan: $130,000

Step 3: Calculate Potential Peak Sales

Peak sales are calculated as: **Number of treated patients with Enhertu × Annual cost per patient**.

1. **US**:

- Treated patients (25% share): ~3,675–4,200 (midpoint: 3,938)

- Annual cost: $190,000

- Peak Sales: **3,938 × $190,000 = ~$748 million**

2. **EU5**:

- Treated patients (25% share): ~4,675–5,350 (midpoint: 5,013)

- Annual cost: $110,000

- Peak Sales: **5,013 × $110,000 = ~$551 million**

3. **China**:

- Treated patients (25% share): ~5,338–6,100 (midpoint: 5,719)

- Annual cost: $60,000

- Peak Sales: **5,719 × $60,000 = ~$343 million**

4. **Japan**:

- Treated patients (25% share): ~1,200–1,375 (midpoint: 1,288)

- Annual cost: $130,000

- Peak Sales: **1,288 × $130,000 = ~$167 million**

Total Potential Peak Sales (25% share):

- US: $748M

- EU5: $551M

- China: $343M

- Japan: $167M

- **Total: ~$1,809 million (or ~$1.81 billion)**

For a range of 20-30% share:

- 20% share: ~$1.45 billion

- 30% share: ~$2.17 billion

Final Estimate for Potential Peak Sales: **$1.45–$2.17 billion** (midpoint: ~$1.81 billion).

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

A 1% share of treated patients corresponds to 1% of the total treated population (~63,825 patients), i.e., ~638 patients.

1. **US**:

- Treated patients (1% share): ~147–168 (midpoint: 158)

- Annual cost: $190,000

- Value of 1% share: **158 × $190,000 = ~$30 million**

2. **EU5**:

- Treated patients (1% share): ~187–214 (midpoint: 201)

- Annual cost: $110,000

- Value of 1% share: **201 × $110,000 = ~$22 million**

3. **China**:

- Treated patients (1% share): ~214–244 (midpoint: 229)

- Annual cost: $60,000

- Value of 1% share: **229 × $60,000 = ~$14 million**

4. **Japan**:

- Treated patients (1% share): ~48–55 (midpoint: 52)

- Annual cost: $130,000

- Value of 1% share: **52 × $130,000 = ~$7 million**

Total $ Value of 1% Share of Treated Patients:

- US: $30M

- EU5: $22M

- China: $14M

- Japan: $7M

- **Total: ~$73 million**

Final Answer:

1. **Potential Peak Sales for fam-trastuzumab deruxtecan-nxki (Enhertu)** in the specified indication (unresectable or metastatic HER2-positive breast cancer) with a 20-30% share of treated patients:

- **Range: $1.45 billion to $2.17 billion**

- **Midpoint: ~$1.81 billion**

2. **$ Value of 1% Share of Treated Patients** across the US, EU5, China, and Japan:

- **Total: ~$73 million**

These estimates are based on assumptions about epidemiology, treatment rates, market share, and pricing. Actual figures may vary depending on real-world data, competition (e.g., other HER2-targeted therapies like trastuzumab, pertuzumab, or T-DM1), and market access dynamics. If specific data on patient numbers or pricing is available, the calculations can be refined further.