To estimate the **Potential Peak Sales** for neratinib (NERLYNX) in the indication of advanced or metastatic HER2-positive breast cancer (in patients who have received two or more prior anti-HER2 therapies) in the US, EU5 (France, Germany, 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. Since specific data on patient numbers, pricing, and market dynamics may not be publicly available in real-time, I will outline the methodology and use reasonable assumptions based on available information, epidemiology, and market trends for HER2-positive breast cancer. If you have specific data (e.g., exact patient numbers or pricing), I can refine the calculations.

Key Steps for Estimation

1. **Estimate the target patient population**: Determine the number of eligible patients with advanced or metastatic HER2-positive breast cancer who have received ≥2 prior anti-HER2 therapies.

2. **Assume treatment penetration**: Use the given 20% to 30% share of treated patients as the market penetration for neratinib.

3. **Estimate pricing and treatment duration**: Use publicly available or assumed pricing data for neratinib and typical treatment duration.

4. **Calculate peak sales**: Multiply the treated patient population by the annual cost of therapy.

5. **Calculate value of 1% share**: Determine the monetary value of 1% of the treated patient population.

Assumptions

- **HER2-positive breast cancer prevalence**: Approximately 15-20% of breast cancer cases are HER2-positive. Of these, a subset progresses to advanced or metastatic stages, and a smaller subset has received ≥2 prior anti-HER2 therapies (e.g., trastuzumab, pertuzumab, T-DM1).

- **Patient population**: Based on epidemiology data and published reports, we can estimate the number of eligible patients in each region.

- **Pricing**: Neratinib's annual cost in the US is approximately $150,000–$180,000 (based on historical data and list prices). Pricing in EU5, Japan, and China may be lower due to healthcare system differences and negotiations (e.g., 50-70% of US price in EU5/Japan, and 30-50% in China).

- **Treatment duration**: Assume an average of 6-12 months of therapy per patient annually (aligned with clinical trial data for neratinib in this setting, e.g., NALA trial).

- **Market share**: Use 20% to 30% of eligible treated patients as the penetration rate for neratinib.

Step 1: Estimate Eligible Patient Population

The target population is patients with advanced/metastatic HER2-positive breast cancer who have received ≥2 prior anti-HER2 therapies. Using epidemiology data and approximations:

- **US**: ~3.8 million breast cancer cases overall; ~15-20% HER2-positive (~570,000–760,000); ~20-30% advanced/metastatic (~114,000–228,000); ~20-30% of these received ≥2 prior therapies (~23,000–68,000). **Midpoint estimate: ~45,000 patients**.

- **EU5**: Combined population similar to US, but slightly lower incidence and prevalence. Estimated eligible patients: ~30,000–50,000. **Midpoint estimate: ~40,000 patients**.

- **Japan**: Smaller population, high diagnosis rate. Eligible patients: ~5,000–10,000. **Midpoint estimate: ~7,500 patients**.

- **China**: Much larger population, but lower diagnosis and treatment access. Eligible patients: ~20,000–40,000 (considering access barriers). **Midpoint estimate: ~30,000 patients**.

Total eligible patients across regions: ~45,000 (US) + 40,000 (EU5) + 7,500 (Japan) + 30,000 (China) = **122,500 patients**.

Step 2: Apply Market Share (20% to 30%)

- At 20% share: 122,500 × 0.20 = **24,500 treated patients**.

- At 30% share: 122,500 × 0.30 = **36,750 treated patients**.

Step 3: Estimate Annual Cost of Therapy

- **US**: $150,000 per patient per year.

- **EU5**: $90,000 per patient per year (60% of US price, reflecting discounts).

- **Japan**: $90,000 per patient per year (similar to EU5).

- **China**: $60,000 per patient per year (40% of US price, reflecting market dynamics).

Breakdown of treated patients by region (proportional to total eligible patients):

- US: ~37% of total (45,000/122,500) → 20% share = 9,065 patients; 30% share = 13,598 patients.

- EU5: ~33% of total (40,000/122,500) → 20% share = 8,065 patients; 30% share = 12,098 patients.

- Japan: ~6% of total (7,500/122,500) → 20% share = 1,470 patients; 30% share = 2,205 patients.

- China: ~24% of total (30,000/122,500) → 20% share = 5,880 patients; 30% share = 8,820 patients.

Step 4: Calculate Potential Peak Sales

At 20% market share:

- US: 9,065 patients × $150,000 = **$1,360 million**.

- EU5: 8,065 patients × $90,000 = **$726 million**.

- Japan: 1,470 patients × $90,000 = **$132 million**.

- China: 5,880 patients × $60,000 = **$353 million**.

- **Total Peak Sales (20% share)**: $1,360M + $726M + $132M + $353M = **$2,571 million (~$2.57 billion)**.

At 30% market share:

- US: 13,598 patients × $150,000 = **$2,040 million**.

- EU5: 12,098 patients × $90,000 = **$1,089 million**.

- Japan: 2,205 patients × $90,000 = **$198 million**.

- China: 8,820 patients × $60,000 = **$529 million**.

- **Total Peak Sales (30% share)**: $2,040M + $1,089M + $198M + $529M = **$3,856 million (~$3.86 billion)**.

Potential Peak Sales Range: **$2.57 billion to $3.86 billion** across the US, EU5, Japan, and China, assuming 20% to 30% market share.

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

A 1% share corresponds to 1% of the total eligible patients (122,500) = **1,225 patients**.

Breakdown by region:

- US: 1% of 45,000 = 450 patients × $150,000 = **$67.5 million**.

- EU5: 1% of 40,000 = 400 patients × $90,000 = **$36.0 million**.

- Japan: 1% of 7,500 = 75 patients × $90,000 = **$6.75 million**.

- China: 1% of 30,000 = 300 patients × $60,000 = **$18.0 million**.

- **Total $ Value of 1% Share**: $67.5M + $36.0M + $6.75M + $18.0M = **$128.25 million**.

Final Answer

- **Potential Peak Sales for Neratinib** in the indication across US, EU5, China, and Japan (assuming 20% to 30% market share): **$2.57 billion to $3.86 billion**.

- **$ Value of 1% Share of Treated Patients** across these geographies: **$128.25 million**.

Notes

- These estimates are based on assumptions and may vary depending on actual patient numbers, real-world pricing, reimbursement policies, competition (e.g., other HER2-targeted therapies like tucatinib or T-DXd), and market access barriers (especially in China).

- If you have access to more precise data on patient populations, pricing, or market dynamics, the calculations can be adjusted accordingly.