

To estimate the **Potential Peak Sales** for brentuximab vedotin (Adcetris) in the specified indication (relapsed or refractory large B-cell lymphoma, or R/R LBCL, after two or more lines of systemic therapy and ineligible for auto-HSCT or CAR T-cell therapy) 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. This involves estimating the target patient population, treatment rates, drug pricing, and market share assumptions.

Since exact data for patient populations, pricing, and treatment rates may not be publicly available, I will outline the methodology and use reasonable assumptions based on publicly available data, epidemiology studies, and market trends for oncology drugs. Note that this is a high-level estimation and actual figures may vary based on proprietary data, clinical adoption rates, and payer dynamics.

Step 1: Define the Target Patient Population

The indication is for adult patients with relapsed or refractory large B-cell lymphoma (LBCL), including DLBCL not otherwise specified (NOS), DLBCL arising from indolent lymphoma, or high-grade B-cell lymphoma (HGBL), after two or more lines of systemic therapy, and who are ineligible for auto-HSCT or CAR T-cell therapy.

- **Epidemiology of DLBCL/LBCL:** DLBCL is the most common subtype of non-Hodgkin lymphoma (NHL), accounting for ~30-40% of NHL cases. The incidence of NHL varies by region, and a subset of patients will progress to relapsed/refractory (R/R) status.

- **R/R LBCL after 2+ lines of therapy:** Approximately 40-50% of DLBCL patients relapse or are refractory to first-line therapy (e.g., R-CHOP). Of these, a further subset fail second-line therapy and are ineligible for auto-HSCT or CAR-T due to age, comorbidities, or other factors. We can estimate that ~10-20% of incident DLBCL patients reach this third-line or later setting and are ineligible for transplant or CAR-T.

- **Geographic Incidence Rates** (per 100,000 population annually for NHL, adjusted for DLBCL):

- US: ~19-20 per 100,000 (DLBCL ~6-8 per 100,000)

- EU5: ~15-18 per 100,000 (DLBCL ~5-7 per 100,000)

- Japan: ~10-12 per 100,000 (DLBCL ~3-4 per 100,000)

- China: ~6-8 per 100,000 (DLBCL ~2-3 per 100,000)

- **Population Estimates (2023):**

- US: ~330 million

- EU5: ~280 million

- China: ~1,400 million

- Japan: ~125 million

Using these figures, we estimate the **incident DLBCL cases** per year:

- US: ~20,000-26,000 cases

- EU5: ~14,000-19,600 cases

- China: ~28,000-42,000 cases
- Japan: ~3,750-5,000 cases

R/R LBCL (3L+ and ineligible for transplant/CAR-T): Assuming ~10-15% of incident cases reach this stage:

- US: ~2,000-3,900 patients
- EU5: ~1,400-2,940 patients
- China: ~2,800-6,300 patients
- Japan: ~375-750 patients

Total Target Population (prevalence, assuming 1-2 years of survival in R/R setting):

- US: ~3,000-6,000 patients
- EU5: ~2,100-4,500 patients
- China: ~4,200-9,500 patients
- Japan: ~500-1,200 patients

Step 2: Estimate Treated Patients

Not all eligible patients will receive treatment due to access issues, patient choice, or palliative care. Assuming a **treatment rate of 60-80%** in the US and EU5, 40-60% in Japan, and 30-50% in China (due to cost and access barriers):

- US: ~1,800-4,800 treated patients
- EU5: ~1,260-3,600 treated patients
- China: ~1,260-4,750 treated patients
- Japan: ~200-720 treated patients

Total Treated Patients Across Geographies: ~4,520-13,870 patients

Step 3: Market Share Assumption

The problem states a **20-30% share of treated patients** for brentuximab vedotin. This reflects the competitive landscape in R/R LBCL, where other therapies (e.g., polatuzumab vedotin, bispecific antibodies like glofitamab, or other salvage regimens) are also used.

- **Patients treated with brentuximab vedotin** (20-30% of treated patients):
- US: ~360-1,440 patients
- EU5: ~252-1,080 patients

- China: ~252-1,425 patients
- Japan: ~40-216 patients
- **Total Patients on Brentuximab Vedotin:** ~904-4,161 patients

Step 4: Pricing and Annual Cost per Patient

Brentuximab vedotin (Adcetris) is a high-cost oncology drug. Pricing varies by region due to healthcare systems and negotiations:

- **US:** ~\$150,000-200,000 per patient per year (based on typical ADC pricing and dosing regimens)
- **EU5:** ~\$100,000-150,000 per patient per year (discounts due to payer negotiations)
- **Japan:** ~\$100,000-150,000 per patient per year
- **China:** ~\$50,000-80,000 per patient per year (lower pricing due to market access and affordability issues)

Using mid-range pricing for simplicity:

- US: \$175,000
- EU5: \$125,000
- China: \$65,000
- Japan: \$125,000

Step 5: Calculate Potential Peak Sales

Peak sales are calculated as: (Number of treated patients with brentuximab vedotin) × (Annual cost per patient)

- **US:** (360-1,440 patients) × \$175,000 = **\$63M - \$252M**
- **EU5:** (252-1,080 patients) × \$125,000 = **\$31.5M - \$135M**
- **China:** (252-1,425 patients) × \$65,000 = **\$16.4M - \$92.6M**
- **Japan:** (40-216 patients) × \$125,000 = **\$5M - \$27M**

Total Potential Peak Sales Across Geographies:

- Low end: \$63M + \$31.5M + \$16.4M + \$5M = **\$115.9M**
- High end: \$252M + \$135M + \$92.6M + \$27M = **\$506.6M**

Thus, **Potential Peak Sales** for brentuximab vedotin in this indication across the US, EU5, China, and Japan are approximately **\$116M to \$507M annually**, assuming a 20-30% market share.

Step 6: Calculate \$ Value of 1% Share of Treated Patients

First, calculate the total number of treated patients (from Step 2) and the revenue per 1% of treated patients based on regional pricing.

- **Total Treated Patients:** ~4,520-13,870

- **1% of Treated Patients:**

- US: 18-48 patients

- EU5: 12.6-36 patients

- China: 12.6-47.5 patients

- Japan: 2-7.2 patients

Now, calculate revenue for 1% share using mid-range patient numbers and pricing:

- **US:** (33 patients) \times \$175,000 = **\$5.78M**

- **EU5:** (24 patients) \times \$125,000 = **\$3.0M**

- **China:** (30 patients) \times \$65,000 = **\$1.95M**

- **Japan:** (4.5 patients) \times \$125,000 = **\$0.56M**

Total \$ Value of 1% Share Across Geographies: \$5.78M + \$3.0M + \$1.95M + \$0.56M = **\$11.29M**

Using the range of treated patients:

- Low end (4,520 patients, 45 patients for 1%): ~\$5.5M

- High end (13,870 patients, 139 patients for 1%): ~\$17M

Thus, the **\$ value of a 1% share of treated patients** across these geographies is approximately **\$5.5M to \$17M**, with a mid-range estimate of **~\$11.3M**.

Final Answer

- **Potential Peak Sales for Brentuximab Vedotin (20-30% market share)** in the US, EU5, China, and Japan for R/R LBCL (3L+, ineligible for auto-HSCT or CAR-T): **\$116M to \$507M annually**

- **\$ Value of 1% Share of Treated Patients** across these geographies: **\$5.5M to \$17M**, with a mid-range estimate of **\$11.3M**

Note: These estimates are based on assumptions and publicly available data. Actual figures may differ based on real-world patient numbers, pricing negotiations, market access, competition, and clinical adoption rates. For precise calculations, proprietary data from market research firms (e.g., EvaluatePharma, GlobalData) or company disclosures would be required.

