

To estimate the **Potential Peak Sales** for sotorasib (Lumakras™) in the indication of KRAS G12C-mutated locally advanced or metastatic non-small cell lung cancer (NSCLC) 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. Given the complexity of the question, I'll break it down into steps and make reasonable assumptions based on publicly available data and industry standards. If specific data (e.g., exact patient numbers or pricing) is unavailable, I'll use estimates and clearly state them.

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## **Step 1: Define the Target Patient Population**

Sotorasib targets adult patients with **KRAS G12C-mutated locally advanced or metastatic NSCLC** who have received at least one prior systemic therapy (second-line or later treatment). Key points to consider:

- **KRAS G12C mutation** accounts for approximately **13% of NSCLC cases** in Western populations (US and EU) and a slightly lower percentage in Asian populations (around 3-5% in China and Japan).
- NSCLC represents about **85% of all lung cancer cases**.
- Only patients with locally advanced or metastatic disease (Stage IIIB-IV) are eligible, which is roughly **50-60% of NSCLC cases**.
- These patients must have received at least one prior therapy, further narrowing the population to second-line or later.

#### Estimated Incidence and Eligible Population:

### **1. US:**

- Annual NSCLC incidence: ~190,000 cases.
- Stage IIIB-IV: ~60% → ~114,000 cases.
- KRAS G12C mutation: ~13% → ~14,820 patients.
- Second-line or later (assuming ~70% progress to second-line): ~10,374 patients.

### **2. EU5 (combined):**

- Annual NSCLC incidence: ~320,000 cases.
- Stage IIIB-IV: ~60% → ~192,000 cases.
- KRAS G12C mutation: ~13% → ~24,960 patients.
- Second-line or later: ~17,472 patients.

### **3. China:**

- Annual NSCLC incidence: ~700,000 cases.
- Stage IIIB-IV: ~60% → ~420,000 cases.
- KRAS G12C mutation: ~4% → ~16,800 patients.
- Second-line or later: ~11,760 patients.

#### 4. Japan:

- Annual NSCLC incidence: ~110,000 cases.
- Stage IIIB-IV: ~60% → ~66,000 cases.
- KRAS G12C mutation: ~4% → ~2,640 patients.
- Second-line or later: ~1,848 patients.

**Total Eligible Patients Across Geographies:** ~10,374 (US) + 17,472 (EU5) + 11,760 (China) + 1,848 (Japan) = **41,454 patients**.

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### **Step 2: Market Share Assumption**

The question assumes a **20% to 30% share of treated patients**. This reflects the penetration rate of sotorasib among eligible patients, considering factors like:

- Competition (e.g., other targeted therapies or immunotherapies like PD-1/PD-L1 inhibitors).
- Access to testing for KRAS G12C mutation.
- Reimbursement and pricing dynamics in different regions.

For peak sales estimation, we'll use the midpoint of **25% market share**.

**Treated Patients with Sotorasib:**  $41,454 * 25\% = 10,364$  patients annually.

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### **Step 3: Pricing of Sotorasib**

Sotorasib (Lumakras™) is a targeted therapy, and pricing varies by region due to healthcare system differences. Based on available data:

- **US:** Annual cost per patient is approximately **\$215,000** (based on initial pricing reports for Lumakras at ~\$17,900/month for 12 months).
- **EU5:** Pricing is typically lower due to negotiations and health technology assessments. Estimated at **~\$120,000 per patient annually**.
- **China:** Pricing is significantly lower due to market access programs and local competition. Estimated at **~\$50,000 per patient annually**.
- **Japan:** Pricing is moderate, aligned closer to EU levels. Estimated at **~\$100,000 per patient annually**.

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### **Step 4: Calculate Potential Peak Sales**

Peak sales are calculated by multiplying the number of treated patients in each region by the annual cost per patient.

1. **US:**

- Treated patients:  $10,374 * 25\% = 2,594$ .
- Annual cost: \$215,000.
- Peak sales:  $2,594 * \$215,000 = \$557.7 \text{ million}$ .

2. **EU5:**

- Treated patients:  $17,472 * 25\% = 4,368$ .
- Annual cost: \$120,000.
- Peak sales:  $4,368 * \$120,000 = \$524.2 \text{ million}$ .

3. **China:**

- Treated patients:  $11,760 * 25\% = 2,940$ .
- Annual cost: \$50,000.
- Peak sales:  $2,940 * \$50,000 = \$147.0 \text{ million}$ .

4. **Japan:**

- Treated patients:  $1,848 * 25\% = 462$ .
- Annual cost: \$100,000.
- Peak sales:  $462 * \$100,000 = \$46.2 \text{ million}$ .

**Total Potential Peak Sales Across Geographies:** \$557.7M (US) + \$524.2M (EU5) + \$147.0M (China) + \$46.2M (Japan) = **\$1,275.1 million (~\$1.28 billion)**.

**Range with 20% to 30% Share:**

- At 20% share: Total sales = **~\$1.02 billion**.
- At 30% share: Total sales = **~\$1.53 billion**.

Thus, the **Potential Peak Sales** for sotorasib in this indication across the specified geographies is approximately **\$1.02 billion to \$1.53 billion**, with a midpoint of **\$1.28 billion**.

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

A 1% share corresponds to 1% of the eligible patient population being treated with sotorasib. Using the total eligible patients (41,454), 1% is **415 patients**.

1. **US:**

- Eligible patients: 10,374.
- 1% share: 104 patients.
- Annual cost: \$215,000.
- Value:  $104 * \$215,000 = \$22.4 \text{ million}$ .

## 2. EU5:

- Eligible patients: 17,472.
- 1% share: 175 patients.
- Annual cost: \$120,000.
- Value:  $175 * \$120,000 = \$21.0 \text{ million}$ .

## 3. China:

- Eligible patients: 11,760.
- 1% share: 118 patients.
- Annual cost: \$50,000.
- Value:  $118 * \$50,000 = \$5.9 \text{ million}$ .

## 4. Japan:

- Eligible patients: 1,848.
- 1% share: 18 patients.
- Annual cost: \$100,000.
- Value:  $18 * \$100,000 = \$1.8 \text{ million}$ .

**Total \$ Value of 1% Share Across Geographies:** \$22.4M (US) + \$21.0M (EU5) + \$5.9M (China) + \$1.8M (Japan) = **\$51.1 million**.

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## Final Answer:

1. **Potential Peak Sales for Sotorasib** in KRAS G12C-mutated NSCLC (second-line or later) in the US, EU5, China, and Japan, assuming a 20% to 30% share of treated patients:

- Range: **\$1.02 billion to \$1.53 billion**.
- Midpoint (25% share): **\$1.28 billion**.

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

- Total: **\$51.1 million**.

**Note:** These figures are estimates based on assumptions about patient populations, mutation prevalence, market penetration, and pricing. Actual values may vary depending on real-world data,

competition, reimbursement policies, and uptake of diagnostic testing for KRAS G12C mutations. If you have access to more specific data (e.g., exact pricing or patient numbers), I can refine the calculations accordingly.