To calculate the **Potential Peak Sales** for the drug “nan” in the specified indication across 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 make several assumptions and follow a structured approach. Since specific data about the drug “nan,” the indication, patient population, pricing, and market penetration are not provided, I will outline a general methodology using reasonable assumptions based on industry standards for oncology or rare disease drugs (given the context of a companion diagnostic like FoundationOne Liquid CDx, which is often used in oncology). You can adjust these assumptions based on more specific data about the drug or indication.

Additionally, the mention of the FoundationOne Liquid CDx test suggests that “nan” may be a targeted therapy for a specific biomarker-defined population, likely in oncology. I’ll assume this context for the analysis.

Step 1: Define Key Parameters

To estimate peak sales and the value of a 1% share of treated patients, we need the following:

1. **Total Addressable Patient Population (TAPP):** Number of patients eligible for treatment in the indication across the specified geographies.

2. **Treated Patient Share:** Percentage of eligible patients who receive treatment (assumed 20%-30% as per the query).

3. **Drug Pricing:** Annual cost of therapy per patient (varies by geography due to pricing differences).

4. **Peak Sales Year:** The year when the drug reaches maximum market penetration (typically 5-7 years post-launch for most drugs).

Assumptions:

- **Indication:** Assume “nan” targets a specific oncology indication (e.g., non-small cell lung cancer, NSCLC, with a specific biomarker) since FoundationOne Liquid CDx is often used in oncology.

- **Total Addressable Patient Population (TAPP):**

- US: ~50,000 patients annually (e.g., NSCLC patients with a specific biomarker like EGFR mutation, ~15-20% of total NSCLC cases).

- EU5: ~60,000 patients annually (larger population but similar incidence rates).

- China: ~100,000 patients annually (higher incidence of lung cancer and larger population).

- Japan: ~20,000 patients annually (smaller population but high incidence of lung cancer).

- **Total TAPP:** ~230,000 patients across all geographies.

- **Treated Patient Share:** 20%-30% of eligible patients are treated (as per query).

- **Annual Cost of Therapy (Pricing):**

- US: $150,000 per patient per year (typical for oncology drugs).

- EU5: $100,000 per patient per year (lower due to price controls).

- China: $50,000 per patient per year (emerging market with lower pricing).

- Japan: $120,000 per patient per year (similar to EU but slightly higher).

- **Peak Sales Year:** Assumed to be reached in Year 5 post-launch with full market penetration within the treated patient share.

Step 2: Calculate Potential Peak Sales

Peak sales are calculated as:

Peak Sales = (Treated Patients) x (Annual Cost of Therapy per Patient)

Treated Patients (at 20%-30% share of TAPP):

- **US:** 50,000 x (20%-30%) = 10,000 to 15,000 patients.

- **EU5:** 60,000 x (20%-30%) = 12,000 to 18,000 patients.

- **China:** 100,000 x (20%-30%) = 20,000 to 30,000 patients.

- **Japan:** 20,000 x (20%-30%) = 4,000 to 6,000 patients.

- **Total Treated Patients:** 46,000 to 69,000 patients.

Peak Sales Calculation:

- **US:** (10,000 to 15,000 patients) x $150,000 = **$1.5B to $2.25B**.

- **EU5:** (12,000 to 18,000 patients) x $100,000 = **$1.2B to $1.8B**.

- **China:** (20,000 to 30,000 patients) x $50,000 = **$1.0B to $1.5B**.

- **Japan:** (4,000 to 6,000 patients) x $120,000 = **$0.48B to $0.72B**.

- **Total Peak Sales: $4.18B to $6.27B**.

Summary of Potential Peak Sales for “nan” (20%-30% Treated Share):

- **US:** $1.5B - $2.25B

- **EU5:** $1.2B - $1.8B

- **China:** $1.0B - $1.5B

- **Japan:** $0.48B - $0.72B

- **Total: $4.18B - $6.27B annually at peak.**

Step 3: Calculate $ Value of 1% Share of Treated Patients

A 1% share of treated patients corresponds to 1% of the total addressable patient population (TAPP) being treated with “nan.” We calculate the number of patients and multiply by the annual cost of therapy per patient.

1% of TAPP:

- **US:** 50,000 x 1% = 500 patients.
- **EU5:** 60,000 x 1% = 600 patients.
- **China:** 100,000 x 1% = 1,000 patients.
- **Japan:** 20,000 x 1% = 200 patients.
- **Total:** 2,300 patients.

$ Value of 1% Share:

- **US:** 500 patients x $150,000 = **$75M**.
- **EU5:** 600 patients x $100,000 = **$60M**.
- **China:** 1,000 patients x $50,000 = **$50M**.
- **Japan:** 200 patients x $120,000 = **$24M**.
- **Total: $209M**.

Summary of $ Value of 1% Share of Treated Patients:

- **US:** $75M
- **EU5:** $60M
- **China:** $50M
- **Japan:** $24M
- **Total: $209M annually.**

Final Answer:

1. **Potential Peak Sales for “nan” (20%-30% Treated Share):**

- US: $1.5B - $2.25B
- EU5: $1.2B - $1.8B
- China: $1.0B - $1.5B
- Japan: $0.48B - $0.72B
- **Total:** $4.18B - $6.27B annually at peak.

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

- US: $75M
- EU5: $60M
- China: $50M
- Japan: $24M

- **Total:** $209M annually.

Notes and Caveats:

- These estimates are based on assumed patient populations and pricing for an oncology drug with a biomarker-defined indication. Actual numbers will depend on the specific indication, prevalence of the biomarker, competition, reimbursement policies, and market access.

- The FoundationOne Liquid CDx test approval suggests a precision medicine approach, so the TAPP may be smaller if the biomarker is rare, or larger if it applies to multiple indications.

- Pricing assumptions reflect typical oncology drug costs but can vary widely based on negotiation with payers and local healthcare systems.

- If you have specific data on the drug, indication, or patient population, these estimates can be refined for greater accuracy.

Please let me know if you'd like to adjust any assumptions or focus on a specific indication or drug class!