

Case Study: Assessing the Effectiveness of Anti-Cancer Drugs through Expectation-Driven Design

In cancer research, the success of approved drugs is typically described using statistical benchmarks across patient populations. However, these figures are often difficult to translate into meaningful insights for individual physicians and their patients. Expectation-Driven Design (EDD) provides an alternative pathway: beginning with an expected outcome and reverse-engineering the steps needed to validate it in practice.

By modeling a transparent, replicable process, clinicians can set an initial expectation (e.g., survival rate, progression-free survival, quality of life), track real-world outcomes in their own patient cohort, and compare them against established benchmarks. This not only allows for personalized feedback but also refines the design of care pathways, ensuring that expectations are continuously aligned with reality.

Example: Lorlatinib (Lorbrena) in ALK-Positive Non-Small Cell Lung Cancer (NSCLC)¹

- **Expectation:** Patients receiving lorlatinib should achieve significantly higher long-term progression-free survival compared to the previous standard of care.
- **Study Setup:** At the 2024 ASCO conference, a Phase III clinical trial was presented involving 296 patients with ALK-positive NSCLC.
- **Observed Outcome:** After five years, 60% of patients treated with lorlatinib remained progression-free, compared to only 8% with the earlier treatment (crizotinib).
- **Significance:** This represents the strongest progression-free survival (PFS) outcome ever recorded in NSCLC.

Reverse-Engineering the Expectation:

1. **Initial Expectation:** Lorlatinib should outperform existing treatment options in long-term survival.
2. **Process Design:** Identify trial conditions (patient selection, treatment regimen, monitoring).
3. **Validation in Practice:** Physicians track outcomes among their own patients, adjusting for context-specific variables (comorbidities, adherence, demographics).
4. **Feedback Loop:** Compare local data with trial benchmarks to refine both expectations and treatment strategies.

Through EDD, expectations are not static—they evolve based on evidence, feedback, and context. This approach enables physicians to bridge the gap between large-scale trial data and the lived realities of patient care.

¹ *The Guardian* – “Trial results for new lung cancer drug are off the charts, say doctors” (May 31, 2024)