

required by regulatory bodies, or they may be run proactively by the sponsor of the newer compound in an attempt to gain market share. Of course, if the new compound is shown to be less efficacious or not as safe as the established drug, the phase IV study results will likely lead to decreased market share, or possibly revocation of marketing rights.

Pharmacoeconomic studies designed to determine the value of the new therapy as compared to the standard of care have also entered the phase IV landscape over the course of the last few decades. In some countries (Canada, Finland, New Zealand, Norway, Sweden, Australia, and the U.K.), an analysis of this type is part of the approval process and can have an impact on whether or not a new drug will be subsidized by government health care programs. It is worth noting that this does not directly impact whether or not a candidate compound will be granted marketing approval. It only impacts who will pay for the new drug once it reaches the market.

Other objective of postmarketing surveillance studies include the identification of low-frequency adverse events, continued safety monitoring to better characterize known risks, gauging the potential for drug–drug interactions, establishing treatment guidelines for pediatric and geriatric populations, and of course, determining the “real-world” efficacy of the candidate compound. The patient population in a phase IV clinical trial is generally much larger and more heterogeneous than would be possible in a phase III study (Keep in mind that phase III studies are often double blinded, randomized trial with strict inclusion and exclusion criteria). Also, the strict control of dosing regimens provided by the research team is absent in most phase IV trials. These factors increase the variability in the drug’s application (e.g., patients applying the medication late, incorrect dosing prescribed, etc.). If a drug fails to fulfill its anticipated goals in the broader population provided in a phase IV study, it might be removed from the market, especially if a more effective therapy is already available.

In some cases, there may be an opportunity to expand the use of an approved therapy. This may be driven by the need to develop new methods of administration or different dosing levels designed to treat a group of patients not served by the originally approved formulation of the candidate compound. It is also possible that diseases or conditions outside of the scope of the original clinical trial (new indications) might be positively impacted by the candidate compound. If a company is interested in increasing the utility of its candidate compound through any of these avenues, it will be necessary to run additional clinical trials in order to gain official marketing approval for the new indication, formulation, or dose level. Expanding the approved diseases and conditions that a candidate compound can be used to treat clinically is a common method of increasing the ongoing value of a drug (profitability).