Olaparib (Lynparza (TM)) is an oral, small-molecule, poly (ADP-ribose) polymerase (PARP) inhibitor being developed by AstraZeneca for the treatment of solid tumours. The primary indication for which olaparib is being developed is BRCA1/2 mutation-positive ovarian cancer. A capsule formulation of the drug has received approval for use in this setting in the EU by the European Medicines Agency (EMA). The application of olaparib has been indicated for germline and somatic mutations in BRCA1 and/or BRCA2 in patients with platinum-sensitive recurrence of serous high-grade ovarian cancer. This requires the analysis of DNA isolated from fresh frozen paraffin-embedded (FFPE) material rather than DNA isolated from blood. However, this therapy-driven switch raises profound technical challenges and intriguing problems in medical care and counselling. For example, decreased sensitivity in mutation detection and a reduced possibility in the evaluation of the variant of unknown significance (VUS) may correlate with inadequate medical care of the patients and their families. Therefore, prospective studies, including the collection of genetic, histopathological and clinical data, are mandatory.