Optical tissue spectroscopy for stratification of entry into advanced cancer screening programs. Here demonstrated for the Breast.

Lothar Lilge, Jane Walter, Jennifer Street, Brenda Ornelas-Lilge
University Health Network Princess Margaret Cancer Centre.

Cancer screening program commonly have a static recommended entry age and screening frequency. In order to reduce the ability to miss true positive cases screening onset is early in age and continues for 20-30 years despite the fact the the probability of being diagnose throughout the 2 decades is >0.1. Conversely, in various low and middle income countries the available infrastructure is insufficient leading to women not obtaining early diagnosis. Risk of a radiologically suspicious lesion is increased when symmetry in the bilateral organ is lost or the rate of changes or metabolic changes is very high. We demonstrated that symmetry and rate of change can be determined on an individual basis using red and near infrared based non-imaging volumetric interrogation. BrCa carriers and hence women with an extreme risk of developing breast cancer are readily identified by this technique. The minimum technical requirements to complete the tasks of identifying women at elevated risks are discussed and the potential of this technique in low and middle income countries with changing population age structures.