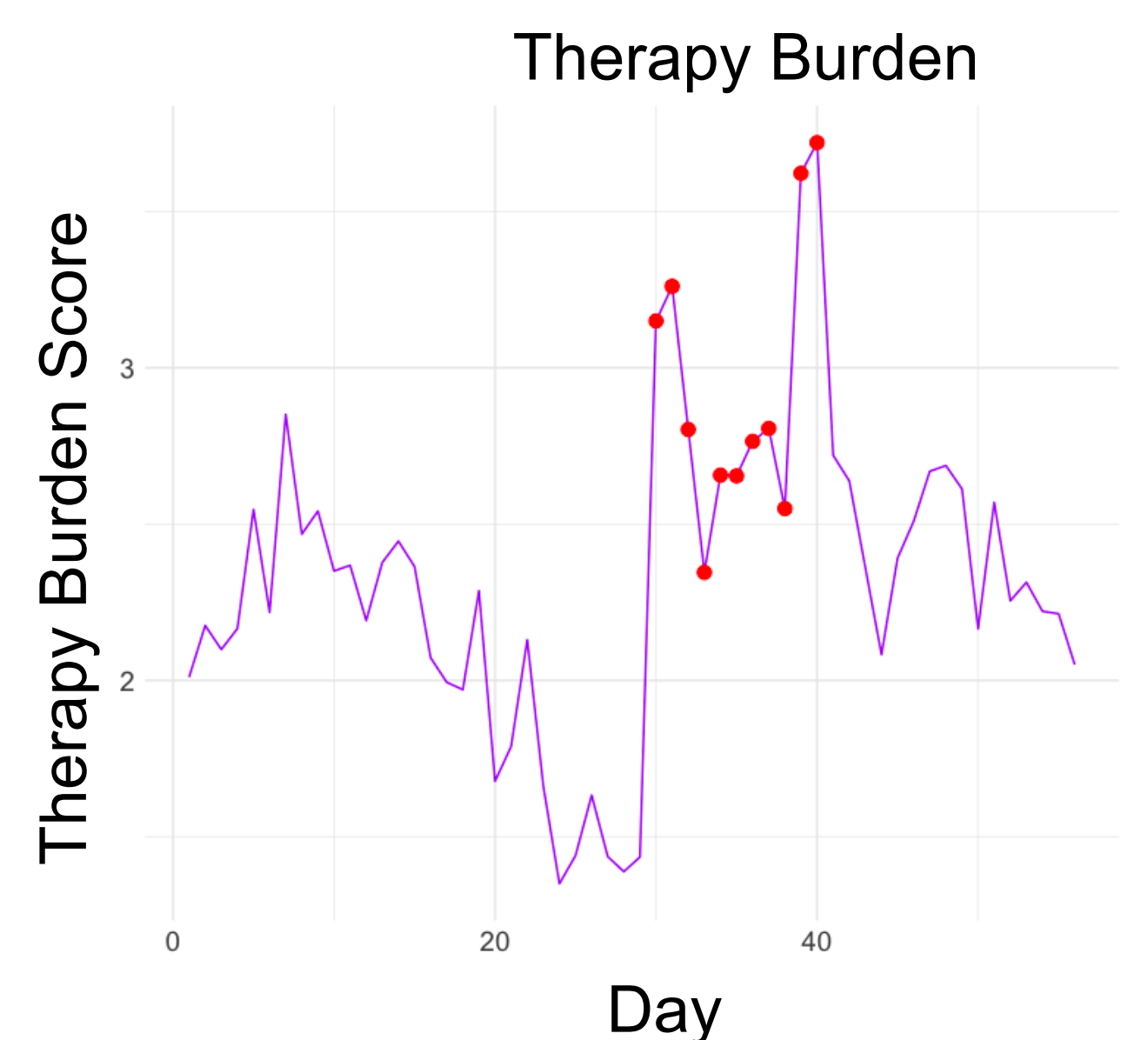
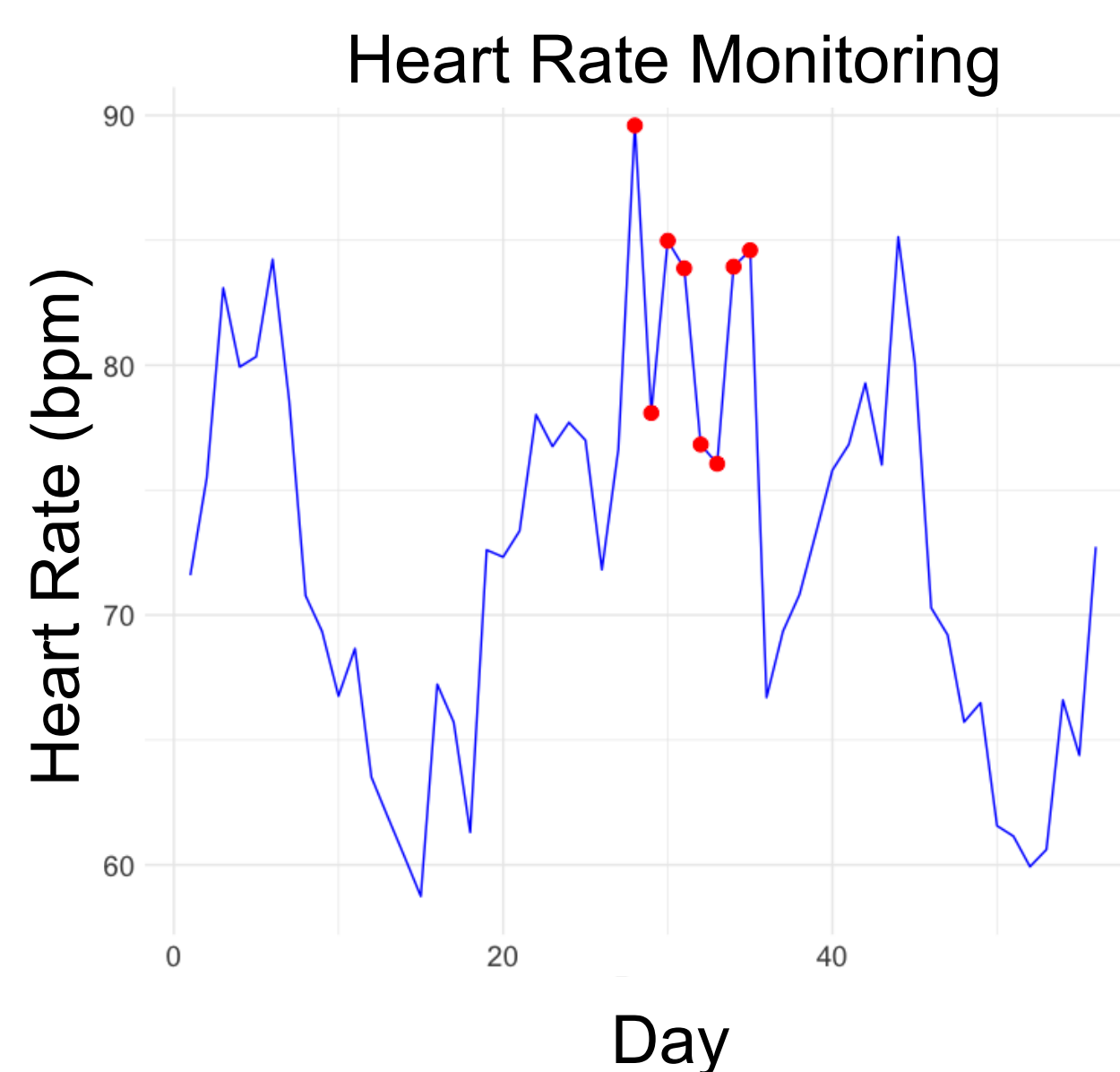
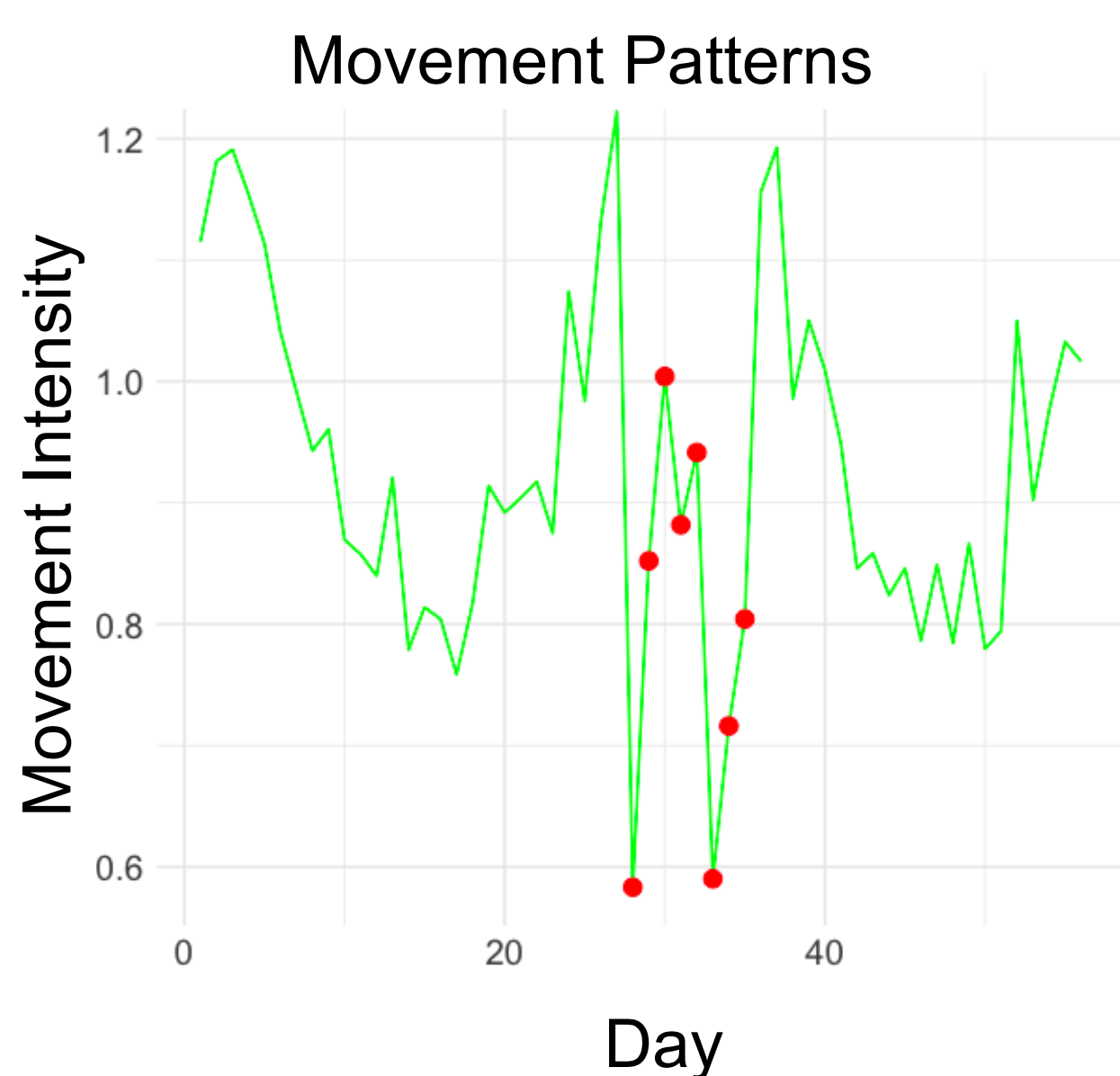
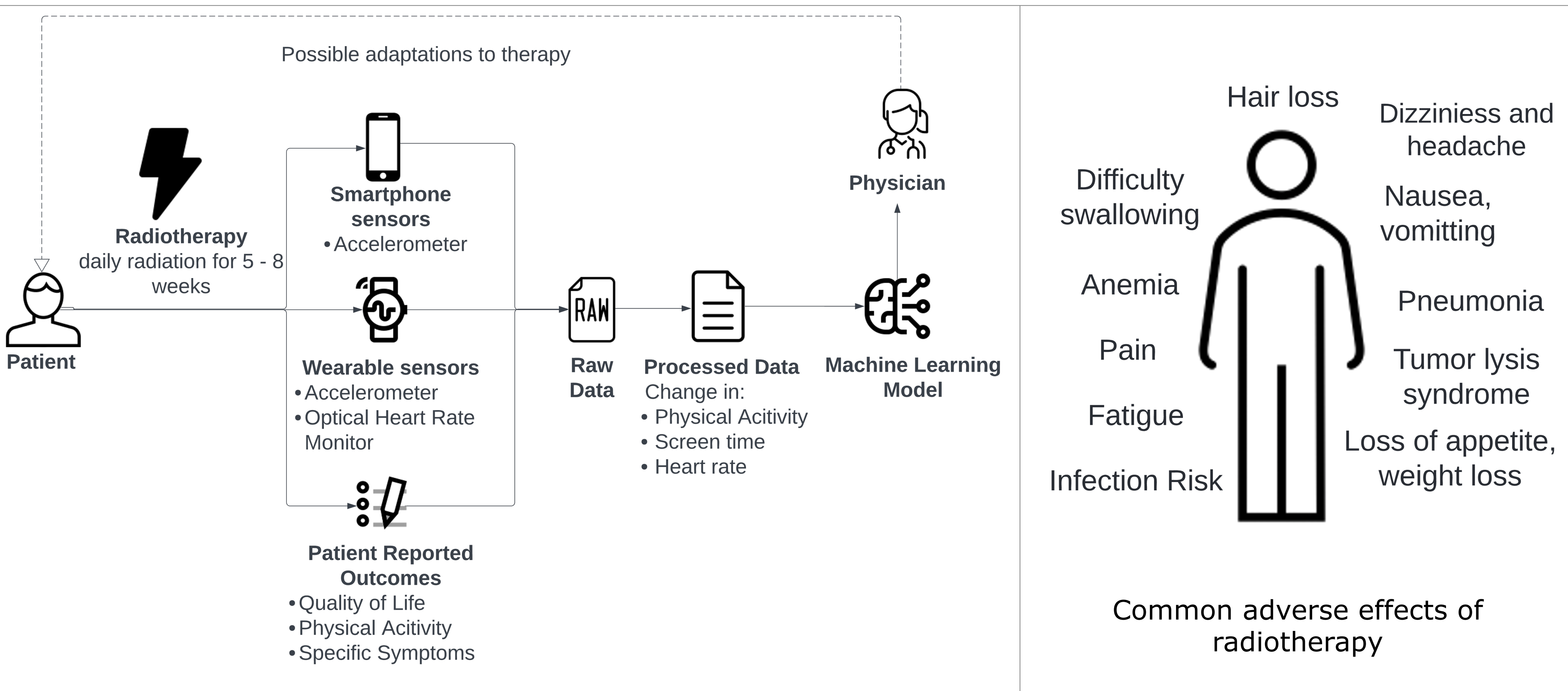


Assessing Radiotherapy Toxicity in Cancer Patients using Wearables

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Radiotherapy plays a crucial role in cancer-therapy, being used in 60% of all cancer patients [1]. It is often associated with severe complications, some of which are therapy-limiting. Complications occur particularly frequently in combination with other therapies, such as chemotherapy or immunotherapy. They are currently assessed through clinical evaluations, which can lead to time delays in their treatment, resulting in a higher therapy burden and reduced therapy efficacy.

Wearables monitoring key physiological parameters will be used in combination with patient-related outcomes. The data will be processed using machine learning algorithms to detect early signs of toxicity. This then allows in therapy adaptations which reduce the toxicity. The research goal is to evaluate the effectiveness of the proposed approach in reducing the complications of radiotherapy treatment, compared to the current clinical standard. This research project proposal is based on the lecture *Connected Healthcare* by Professor Bert Arnrich.



Simulated data: The combination of increased heart-rate combined with reduced movement intensity (shown with red dots) can be an early sign of complications of the radiotherapy.

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[1]Peinado-Serrano J, Carnero A. Molecular Radiobiology in Non-Small Cell Lung Cancer: Prognostic and Predictive Response Factors. *Cancers (Basel)* 2022;14:2202. doi: 10.3390/cancers14092202.