



## RESEARCH TOPIC CL17

### PRISTINE trial: PProton beam therapy In Seminoma - Toxicity INvestigation and Evaluation of outcome

#### Research area

Service Area

#### Clinical Unit name

Radiation Oncology Department, Humanitas Research Hospital, Rozzano

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#### Abstract

Stage II seminoma is a highly curable disease, typically affecting young adult men. While radiotherapy remains an effective treatment option, long-term radiation-related toxicity and the risk of secondary malignancies represent major concerns given the excellent life expectancy of this population. Proton beam therapy (PBT), by virtue of its favorable dose distribution and reduced irradiation of surrounding healthy tissues, has the potential to minimize unnecessary radiation exposure compared with conventional photon-based radiotherapy. In parallel, circulating microRNA miR-371a-3p has emerged as a highly sensitive and specific biomarker for disease monitoring in seminoma. However, its role during and after radiotherapy has not been prospectively investigated. The PRISTINE trial was designed to prospectively evaluate the safety and feasibility of PBT in stage II seminoma, while integrating dosimetric modeling of secondary malignancy risk and exploratory biomarker analysis to support a more personalized and less harmful treatment strategy.

#### Scientific references

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