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# CNAO advances in proton and carbon ion patient treatment

*Thursday, 18 October 2012 10:00 (30 minutes)*

CNAO, Centro Nazionale di Adroterapia Oncologica, is the first hadrontherapy facility in Italy with both proton and carbon ion (maximum energy 400 MeV/u) therapeutic beams. It is equipped with three treatment rooms with fixed horizontal and vertical beam lines with active spot scanning dose delivery system. Patient treatment with protontherapy (PT) has started in September 2011 after physical and biological beam qualification. Treatments with carbon ion radiotherapy (CIRT) will start in September 2012 after the conclusion of the physical and biological commissioning of the CNAO carbon ion beam and the definition of the beam RBE (Radiobiological Effectiveness). In vitro and in vivo experiments are currently running for the CNAO carbon ion beam qualification within the frame of national (INFN –Istituto Nazionale di Fisica Nucleare) and international (NIRS- National Institute of Radiological Sciences, Chiba, Japan) research collaborations. At present, all PT patient treatments are performed within clinical protocols specifically authorized by the Italian Ministry of Health and aiming at the Certification for the routine clinical practice. Eight protocols have been approved so far for patient PT: skull base chordoma and chondrosarcoma, spinal chordoma and chondrosarcoma, reirradiation of recurrence of spinal chordoma and chondrosarcoma, meningioma, brain carcinoma, glioblastoma, re-irradiation of head and neck cancer, and boost after photons RT in locally advanced head and neck cancer. Three new protocols have been approved for CIRT as part of the CNAO Certification process: salivary gland adenoid cystic cancer, recurrent salivary gland pleomorphic adenoma and reirradiation of recurrent rectal cancer. A wider cancer ethiology are expected to be treated at CNAO in the near future as part of the routine clinical practice for cancer patients.

**Primary author:** Dr ORECCHIA, Roberto (CNAO Centro Nazionale Adroterapia Oncologica, Pavia, Italy, and European Institute of Oncology, Milano, Italy)

**Co-authors:** Dr IANNALFI, Alberto () CNAO Centro Nazionale Adroterapia Oncologica, Pavia, Italy); Dr VISCHIONI, Barbara () CNAO Centro Nazionale Adroterapia Oncologica, Pavia, Italy); Dr FIORE, Maria Rosaria () CNAO Centro Nazionale Adroterapia Oncologica, Pavia, Italy); Dr FOSSATI, Piero (CNAO Centro Nazionale Adroterapia Oncologica, Pavia, Italy, and Department of Biomedical Sciences and Technologies, University of Milano, Italy); Dr VITOLO, Viviana () CNAO Centro Nazionale Adroterapia Oncologica, Pavia, Italy)

**Presenter:** Dr ORECCHIA, Roberto (CNAO Centro Nazionale Adroterapia Oncologica, Pavia, Italy, and European Institute of Oncology, Milano, Italy)

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