

# Radiation treatment of hemato-oncological patients in times of the COVID-19 pandemic: Expert recommendations from the radiation oncology panels of the German Hodgkin Study Group and the German Lymphoma Alliance

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**Purpose:** The coronavirus pandemic is affecting global health systems, endangering daily patient care. Hemato-oncological patients are particularly vulnerable to infection, requiring decisive recommendations on treatment and triage. The aim of this survey amongst experts on radiation therapy (RT) for lymphoma and leukemia is to delineate typical clinical scenarios and to provide counsel for high-quality care.

**Methods:** A multi-item questionnaire containing multiple-choice and free-text questions was developed in a peer-reviewed process and sent to members of the radiation oncology panels of the German Hodgkin Study Group and the German Lymphoma Alliance. Answers were assessed online and analyzed centrally.

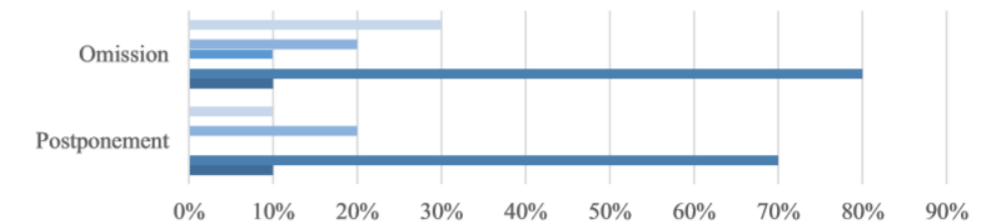
The survey is divided into two parts representing consecutive phases of the COVID-19 pandemic (Table 1, Fig. 1,2). The first scenario (phase 1) describes an early situation during the pandemic in which sufficient personal and treatment capacities are available. Later, the second phase (phase 2) is characterized by a critical shortage in resources.

**Table 1** Overview of the clinical scenarios for which different questions concerning priority, delay, and omission of therapy had to be answered

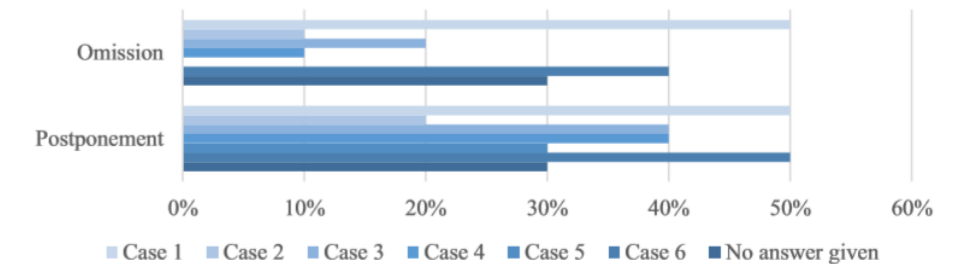
Case 1:	Painful osteolytic lesion caused by multiple myeloma in non-weightbearing bones after stabilizing surgery
Case 2:	Osteolytic lesion of multiple myeloma in weightbearing bones (e.g., axial skeleton) without surgery
Case 3:	Limited-stage Hodgkin lymphoma, Ann-Arbor stage II without risk factors after completion of two cycles of ABVD
Case 4, 5:	Diffuse large B-cell lymphoma with initial abdominal bulky disease after completion of six cycles of R-CHOP 4) With no information on PET status 5) PET-positive after treatment
Case 6:	Early-stage indolent lymphoma in noncritical location

ABVD adriamycin, bleomycin, vinblastine, dacarbazine; R-CHOP rituximab, cyclophosphamide, hydroxydaunorubicin, oncovin, prednisone;  
PET positron emission tomography

**Fig. 1** Overview of answers concerning postponement and omission of radiotherapy as provided by the participants for clinical cases in phase 1 of the pandemic (n = 10)



**Fig. 2** Overview of answers concerning postponement and omission of radiotherapy as provided by the participants for clinical cases in phase 2 of the pandemic (n = 10)



**Results** Omission of RT was only considered in a minority of cases if alternative treatment options were available. Hypofractionated regimens and reduced dosages may be used for indolent lymphoma and fractures due to multiple myeloma. Overall, there was a tendency to shorten RT rather than to postpone or omit it (Fig. 1 and 2). Even in case of critical resource shortage, panels agreed to start emergency RT for typical indications (intracranial pressure, spinal compression, superior vena cava syndrome) within 24h. Possible criteria to consider for patient triage are the availability of (systemic) options, the underlying disease dynamic, and the treatment rationale (curative/palliative).

**Conclusion** RT for hemato-oncological patients receives high-priority and should be maintained even in later stages of the pandemic. Hypofractionation and shortened treatment schedules are feasible options for well-defined constellations, but have to be discussed in the clinical context.