

## Abstract

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Radiotherapy utilisation rates for patients with cancer as a function of age: A systematic review.

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**INTRODUCTION:** There is an increasing incidence of cancer in older people, but limited data on radiotherapy uptake, and in particular, radiotherapy utilisation (RTU) rates. The RTU rate for older adults with cancer may be lower than recommended due to lower tolerance for radiotherapy as well as additional comorbidities, reduced life expectancy and travel for treatment. Radiotherapy use must be aligned with best available, age-specific evidence to ensure older adults with cancer receive optimal benefit without harms.

**MATERIALS AND METHODS:** A systematic review was conducted to synthesise the published data on the actual RTU rate for patients with cancer as a function of age. MEDLINE and EMBASE were systematically searched to identify relevant population-based and hospital-based cohort studies on radiotherapy utilisation for all age groups, published in English, from 1 January 1990 to 1 July 2020. We focused on the following common cancers in older adults for which radiotherapy is recommended: breast, prostate, lung, rectal cancer, glioblastoma multiforme (GBM), and cervical cancer. Age-specific radiotherapy utilisation data were extracted and analysed as a narrative synthesis.

**RESULTS:** From 2606 studies screened, 75 cohort and population-based studies were identified with age-specific radiotherapy utilisation data. The total number of patients in the 75 studies was 4,792,138. The RTU rate decreased with increasing age for all tumour sites analysed, except for patients receiving curative radiotherapy as definitive treatment for prostate or cervical cancer. This reduction with increasing age was demonstrated in both palliative and curative settings.

**DISCUSSION:** There is a global reduction in radiotherapy utilisation with increasing age for most tumour sites. The reduction in delivery of radiotherapy warrants further examination and evidence-based guidelines specific to this population.

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