Analysis of cancer treatment reveals need for standardized methods to measure waiting times

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A review of associations between cancer waiting times and treatment outcomes highlights inconsistencies in reporting that make it hard to draw firm conclusions, according to a report published today in *eLife*.

The analysis suggests that methods used to measure lag times between cancer diagnosis and treatment should be standardized and updated to take into account different timepoints in the cancer care continuum and the use of newer treatments.

There has been considerable focus in recent years on the lag time between cancer diagnosis and treatment in the UK, particularly during the COVID-19 pandemic. During the pandemic, routine and diagnostic patient visits to primary care ceased or reduced, there were changes in treatment dosing and fractionation of radiotherapy, as well as delays and interruptions to chemotherapy, and surgery was reserved for the most urgent, non-elective cases.

"There is rising concern that current lag times to diagnosis and treatment that deviate from standard-of-care practice will lead to poorer outcomes for cancer patients," says lead author Parker Tope, Research Assistant in the Division of Cancer Epidemiology at McGill University, Montreal, Canada. "The purpose of our review was to allow contextualization of pandemic-related lag times by providing an overview of aggregated pre-pandemic data from studies on the association between lag time to cancer diagnosis and treatment outcomes."

The team searched for studies examining any association between lag times and cancer outcomes and found 20 meta-analyses and nine systematic reviews to include in their analysis. Across the different studies, the research covered 32 different lag time intervals—that is, lag times between different milestones in cancer care—and nine different cancer types.

They found that across the different cancer types and lag times studied, associations between lag times and cancer progression or death often conflicted between studies. The clearest, most informative data was for breast, colorectal and ovarian cancer. For example, the evidence

suggested that a delay between surgery and adjuvant chemotherapy in breast cancer increased the risk of death, while in bowel cancer, ensuring there is a sufficiently long time-lag between chemoradiotherapy and surgery was associated with lower disease progression.

Although there were some clear trends such as this, the analysis identified three significant shortfalls in the methods used to look at the impact of lag times, which the authors say will hinder attempts to monitor these trends over time and evaluate the impact of the pandemic.

First, the studies analyzed varied in their ability to account for changes to standard-of-care treatments, which may reduce the risk of disease progression or death. Second, there was ambiguity in defining the start and end points of the milestones in cancer care, which makes it difficult to compare or pool data. Third, the studies do not consider individual patients' stage of disease, or prognosis, and whether this impacts on why there is a time lag between points in their care. For example, the increased risk of death from breast cancer in people who experienced a longer time between surgery and chemotherapy included people having palliative treatment, and this is likely to skew the outcomes.

The authors conclude that changes should be made to the Aarhus statement, a set of recommendations and checklists that arose from discussions about the best way to conduct research on lag times in cancer diagnosis. Extending the statement to encompass lag times across the entire cancer care continuum, not only diagnosis, would help researchers more accurately estimate the risks caused by changes in cancer care provision such as those seen during the COVID-19 pandemic.

"Our extensive characterization of the effect of lag time on cancer outcomes could aid in gauging lag times in cancer care experienced during the pandemic. However, while meta-analyses can summarize the impact of time to treatment for common cancers, they may not capture

information relevant to particular patient populations or outcomes," says senior author Eduardo Franco, Director, Division of Cancer Epidemiology, McGill University. "We hope the findings of this scoping review can guide future studies and meta-analyses in this area, acting as a blueprint for those assessing time lag intervals and/or multiple sites."

This study will be included in *eLife*'s upcoming Special Issue on the impact of the COVID-19 pandemic on cancer prevention, control, care and survivorship.

More information: Parker Tope et al, The impact of lag time to cancer diagnosis and treatment on clinical outcomes prior to the COVID-19 pandemic: A scoping review of systematic reviews and meta-analyses, *eLife* (2023). DOI: 10.7554/eLife.81354

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