

Risk factors and implications of colon and rectal cancer diagnosis as an emergency presentation: an ICBP study

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Title: Risk factors and implications of colon and rectal cancer diagnosis as an emergency presentation: an ICBP study

Abstract text: Background: Greater understanding of international cancer survival differences is needed, particularly for common cancers with effective screening methods, such as colon and rectal cancer.

Aim: To identify the predictors and consequences of colon and rectal cancer diagnosis through emergency presentation in different international jurisdictions, and possible associations with jurisdiction-level cancer survival.

Methods: Using federated analysis, we examined cancer registration and linked hospital admissions data from 14 jurisdictions in Australia, Canada, Denmark, New Zealand, Norway, and the UK on patients with colon and rectal cancer during 2012-2017. This was an International Cancer Benchmarking Partnership (ICBP) study. Emergency presentation was defined as diagnosis of cancer within 30 days after an emergency hospital admission. We examined predictors of emergency presentation and associations between emergency presentation and short-term mortality. We meta-analysed estimates across jurisdictions and explored jurisdiction-level associations between cancer survival and the percentage of patients diagnosed as emergencies.

Results: In 305,954 patients with the 2 studied cancers, there was consistent cross-jurisdictional variation in the percentage of emergency presentation by cancer site, colon cancer having the highest overall percentage on average (29.4% [65,547/222,629]), and rectal cancer the lowest (12.1% [10,051/83,325]). Older age (i.e., 75-84 years and 85 years or older, and advanced stage at diagnosis, were consistently (across jurisdictions) associated with increased emergency presentation risk for both cancers. A J-shaped association for colon cancer was also apparent, whereby the youngest age group (15-64) had greater risk compared to that immediately older (65-74). Across the jurisdictions, emergency presenters had substantially greater risk of 12-month mortality than non-emergency presenters for both cancers. A 10% increase in jurisdiction-level percentage of emergency presentations was associated with a decrease in jurisdiction-level 1-year survival for colon cancer (-7.0% [-13.0 to -1.2, p=0.022]), though no such association was apparent rectal cancer (p=0.89).

Conclusion: Internationally, large proportions of patients with colon cancer are diagnosed through emergency presentation. Older age, and advanced stage at diagnosis are consistently associated with an increased risk of emergency presentation for both colon and rectal cancer, which strongly predicts mortality and probably contributes to international differences in colon cancer survival. Future research is needed to examine the frequency of emergency presentation, particularly of colon cancer, in other countries. Improving screening participation or introducing population-based bowel cancer screening programmes in countries where no such programmes currently exist, can help to reduce emergency presentations from colon and rectal cancer, and reduce associated mortality.

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