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Does access to health services influence the diagnostic pathway and outcome from cancer: analysis of a linked dataset

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Objectives

To determine whether cancer diagnostic pathways and survival are affected by access to GP practice, diagnostic centre and cancer treatment centre.

Cancer treatment in the UK is generally delivered in large cancer centres within major cities. This could have a detrimental effect on outcomes for people from rural areas who develop cancer. Historical UK studies suggest distance from services affects cancer outcomes. In recent years several developments, such as cancer networks and suspected cancer referral pathways, have occurred within the UK NHS, which may have reduced earlier inequalities. It is currently unknown whether a person's geographical location within the UK has implications for the timeliness of their receipt of a diagnosis and treatment for cancer.

Approach

Routine clinical data from Scottish Morbidity Record (SMR) 01, Scottish Cancer Registry SMR 06, and Geographical Information Systems (GIS) derived measures of road distances and travelling times from key healthcare facilities have been linked to a clinical tracking database, NHS Grampian Cancer Care Pathway to form the Northeast and Aberdeen Scotland Cancer and Residence (NASCAR) database. This linkage provided a retrospective cohort of 13 702 people diagnosed with cancer since 2007. Logistic regression analyses have been conducted to determine the effect of distance from services on provider delays and survival at one year following diagnosis.

Results

Of the 13 702 patients included in the analysis the mean age was 67.4 Å 13 years and 45% were male. The highest proportion of patients lived within one mile of their GP practice (35.5%),

less than five miles from their diagnostic centre (39.6%) and less than five miles from their cancer treatment centre (39.6%).

Distance to GP practice or distance to diagnostic centre was not a significant predictor of timely treatment (treatment within 62 days of GP referral) or survival at one year following diagnosis.

Increased distance to cancer treatment centre predicted shorter timely treatment intervals (5-9 miles [OR 1.50; CI 1.18-1.90], 10-29 miles [OR 1.09; CI 0.90-1.31], 30-59 miles [OR 1.26; CI 1.05-1.52], > 60 miles [OR 1.72; CI 1.41-2.09]. Increased distance to treatment centre > 60 miles was associated with quicker times between diagnosis and receipt of treatment [OR 1.26; CI 1.12-1.42].

Conclusion

Increased distance to cancer treatment centre is associated with shorter treatment intervals. There was no association between likelihood of metastatic disease at diagnosis or survival at one year. Analysis is on-going into travelling times to services and may provide further insight.

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