



RESEARCH

INFORMATION

Examining the impact of multimorbidity on lung and colorectal cancer in Scotland



AIMS

Multi-morbidity is a term that describes when people are living with more than one serious health condition. This study had two aims:

1. To examine the impact of multi-morbidity on cancer diagnostic pathways, treatments and survival in Scotland (for colorectal & lung cancers)
2. To help establish the usefulness of a new primary care data resource: the Scottish Primary Care Information Resource (SPIRE) for research



KEY FINDINGS

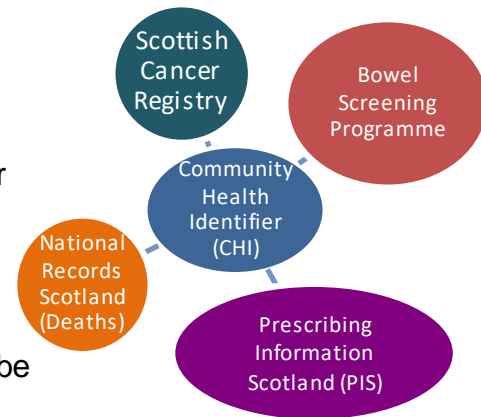
- Using the Safe Haven (a specially designed secure place to work with NHS data), data from 25,678 patients with lung cancer identified by the Scottish Cancer Registry were linked other datasets using the Community Health Index (CHI) – the unique number given to NHS Scotland registered patients. 19,043 patients with colorectal cancer were identified and data linkage carried out. We used the prescriptions data (polypharmacy) as a proxy measure of multi-morbidity.
- Among colorectal cancer patients where data on staging were available, no statistically significant relationship (association) was found between stage (or severity) of disease and multi-morbidity, either before or after other potential factors were taken into account.
- For lung cancer patients, there is evidence of greater multi-morbidity being associated with less advanced stage at diagnosis once other factors have been taken into account, although the data available were limited -stage of cancer was not available for a third of patients).
- During the time-period of the study the SPIRE dataset project encountered a number of challenges that impacted on its use for our project (see below).





WHAT DID THE STUDY INVOLVE?

- We linked key Scottish health datasets: Cancer Registry (SMR06) & National Records of Scotland (Deaths) for lung cancer and colorectal cancer patients; Prescribing Information Scotland (PIS); Bowel Cancer Screening. SPIRE (Primary Care) was planned, but didn't happen.
- Using number of prescriptions as a measure for multi-morbidity. We used 'rules' for this – for current medication within the medication groupings, the prescription had to be within the 84 days prior to diagnosis, and to understand routine medication, prescriptions had to be prescribed sometime in the previous 9 month period.



WHAT WERE THE RESULTS AND WHAT DO THEY MEAN?

- We used drug prescribing as a proxy for multi-morbidity. We used the patient-level data in the PIS and mapped these onto the chapters of the British National Formulary (BNF) where the chapters relate to different bodily systems, so give an indication of the nature of the patient's illnesses.
- The table below presents key results for the lung cancer dataset. A 'negative relationship' is where one variable increases as the probability of the other decreases. The main results are that for this group of patients, having more morbidities ('all chronic prescribing') was associated with earlier stage of disease, receiving limited treatment or receiving radiotherapy. Importantly, examining by BNF allows us to see a complex pattern where some specific illness *do* affect the outcome
- For colorectal cancer, multimorbidity was not associated with stage of cancer at diagnosis

Key Results – Lung Cancer (Multivariable Modelling)
 ✓ Positive relationship ↑↑ ✓ Negative Relationship ↑↓ * No Relationship

	All Chronic Prescribing	BNF Chapters/Subsection* (Bodily Systems)		Other Significant Factors (Demographic/Clinical)
Cancer Stage	✓	Musculoskeletal	Gastro-intestinal Respiratory sys. Endocrine sys. Genito-urinary Blood & nutrition	Age, incidence year, urban/rural, mode of diagnosis, tumour site
Treatment (any)	✓	Gastro-intestinal	Respiratory Nervous system Endocrine Blood & nutrition	Age, socio-economic status, urban/rural, tumour site, stage
Radiotherapy	✓	Respiratory Musculoskeletal	Nervous system Blood & nutrition	Age, socio-economic status, urban/rural, mode of diagnosis, tumour site, stage
All Cause Mortality	*	Nervous System	Genito-urinary system	Age, socio-economic status, incidence year, urban/rural, mode of diagnosis, tumour site, stage, treatment/s
Lung Cancer Mortality	✓	Nervous System Musculoskeletal	Respiratory Genito-urinary	Age, socio-economic status, incidence year, urban/rural, mode of diagnosis, tumour site, stage, treatment/s



WHAT IMPACT COULD THE FINDINGS HAVE?

- One result from this study is that lung cancer patients with high levels of multi-morbidity (as measured by multiple prescriptions) are often diagnosed at an earlier stage than those with fewer multi-morbidities. This may reflect more frequent visits to primary care, and possibly heightened vigilance by the GP for changes in the patient's symptoms.
- For both colorectal cancer and lung cancer patients, treatment considerations (whether surgery, radiotherapy or chemotherapy) seem to be influenced by the nature of the patient's other illnesses.
- Completeness of data for cancer stage in the Cancer Registry has improved in recent years



HOW WILL THE OUTCOMES BE DISSEMINATED?

- We are writing two comprehensive papers (one for colorectal cancer, and one for lung cancer), so that we can share the results in clinical journals (British Journal of Cancer, Gut, or Thorax).
- At the Ca-PRI Conference, Groningen (18-20th April 2018), the results were presented in a short-oral presentation by Dr Karen Barnett, one of the research team.
- We have a rich dataset with much opportunity for further work but funding has finished. We are considering a CSO Catalyst Grant (£30,000) to feed into a future bigger grant, also we wish to re-visit use of SPIRE for primary care and cancer research in Scotland.



CONCLUSION

- We found complex impacts of multi-morbidity on colorectal and lung cancer patients in Scotland: outcomes for patients vary by number and type of prescriptions
- The challenges with SPIRE included longer than envisaged internal set-up and sign-off, the SPIRE switch on in NHS Boards had to be implemented and tested with care, sufficient time for a public campaign for people who want to opt out of SPIRE to be given the chance to do so. However, much progress has been made over the last 12-18 months.



RESEARCH TEAM & CONTACT

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Additional Information

Estudy completion date: March 2018; funding £182,959

