Scottish Government Health Directorates Chief Scientist Office

CHIEF SCIENTIST OFFICE

FOCUS ON RESEARCH

USING CROSS SECTORAL DATA LINKAGE TO IDENTIFY FACTORS ASSOCIATED WITH EMERGENCY ADMISSIONS AND REPEAT ADMISSIONS FOR A COHORT OF PATIENTS WITH COPD IN LOTHIAN

Researchers

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Aim

i) To exploit the potential of an existing chronic obstructive pulmonary disease (COPD) dataset to understand factors influencing first and repeat admissions for COPD patients. ii) To investigate the effectiveness of the Meteorological Office (MO) health forecasting service in reducing admissions and repeat admission

Project Outline/Methodology

Data for long term oxygen therapy (LTOT) and the MO Forecast Alert service were added to an existing dataset for Lothian COPD patients. This dataset contained primary care, hospital admissions, respiratory and pulmonary rehabilitation data for 7071 COPD patients linked at patient level. Suitable statistical methods, which took account of the timing of primary care interventions, were used to determine which patient characteristics and interventions were associated with risk of first and second hospital admission for acute exacerbation (flare-up) of COPD (AECOPD). An extension of this model was used to investigate the risk factors associated with subsequent admissions.

Key Results

1756 (25%) of the cohort had at least one AECOPD admission and 794 (11%) had a repeat admission in a median follow up time of 4.1 years. 360 (5%) patients received LTOT during follow up. The median duration of LTOT was 1.2 years.

Older age, low or unknown body mass index (BMI), current smoking, greater social deprivation, more severe COPD or unknown severity, COPD-related hospitalisation prior to primary care diagnosis, prior COPD intervention, and comorbidity at baseline were all associated with greater risk of first AECOPD. There was a weaker association of baseline characteristics with risk of repeat admissions (second to tenth) with only BMI, severity and prior COPD-related hospitalisation being associated with risk of further AECOPD admissions. Several primary care interventions appeared to be associated with increased risk of AECOPD admission. These results are likely to be due to differences between people who received and those who did not receive the interventions that could not be accounted for in the statistical model.

549 (8%) of the cohort were enrolled in the MO forecast alert service; 134 (24%) experienced AECOPD admission. Participants were younger and less deprived, with less missing data than the rest of the cohort. The prevalence of other illnesses and low BMI was lower; a higher proportion had received the primary care interventions. Receiving the MO service was not significantly associated with risk of admission; uncertainty remains due to the relatively small numbers enrolled.

Conclusions

Patient characteristics at diagnosis were associated with risk of AECOPD admission and repeat admission, with fewer characteristics being associated with readmission. Due to unmeasured factors it was not possible to conclude whether primary care interventions reduced the risk of AECOPD admission.

What does this study add to the field?

The majority of other risk factor admission studies have been based in secondary care. Patient characteristics associated with risk of AECOPD admission and readmission were identified from a primary care based population. The study also provides a descriptive analysis of characteristics, interventions received and outcomes for patients on LTOT and receiving MO alerts.

Implications for Practice or Policy

This study highlights the complexity and limitations of using routine primary care data in retrospective analysis of interventions. However, it provides a rich database to inform health care planning.

Where to next?

We plan to: investigate inequalities in COPD disease management; study the costs of illness; provide input to NHS Lothian's COPD Integrated Service Model Project.

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