Background

- Chronic Obstructive Pulmonary Disease (COPD) is commonly caused by smoking. It is characterised by airway obstruction that is usually progressive, non-reversible and does not change markedly over several months.
- COPD patients are at risk of their symptoms becoming suddenly worse, known as an exacerbation.
- Mild exacerbations may be treatable by the patients themselves or by their GP, but one-fifth are severe enough to result in admission to hospital.

How do COPD admissions vary?

- Over time, COPD admissions are increasing.
- COPD admissions are higher in winter, when patients are most at risk of exacerbation, and especially high during Christmas and New Year.
- The winter peaks are higher in some years than in others, but the timing of the peak is usually the same.
- COPD admissions fall during spring and summer, and start to increase again during autumn.
- Admissions tend to be higher at the beginning and end of the week and lower at the weekends and on bank holidays.
- The seasonal pattern is similar across the NHS regions, although there are more admissions in some areas like Cheshire & Merseyside than in others like the South West Peninsula.
- Most respiratory diseases, excluding asthma, show similar patterns.

Are viruses and infections important?

- In winter, there is a general increase in the number of chest infections, often associated with respiratory viruses.
- Visits to GPs with flu and bronchitis show a peak in winter that is very similar to the peak in COPD admissions.

- COPD patients are particularly at risk from chest infections which, in turn, cause their symptoms to become worse.
- COPD admissions are particularly high in winters that have a high incidence of flu.

What else affects the risk of COPD admission?

- In winter, cold air may cause patients’ airways to become narrower, making it more difficult to breathe.
- In summer, air pollution, heat and humidity can cause breathing difficulties.
- Depression and anxiety are both linked to increased risk of exacerbation.
HEALTH FACTSHEET
Seasonal variation in COPD

How the Met Office uses this information

- The Met Office uses its findings on seasonal variation of COPD, together with other findings on the effects of chest infections and weather, in a model to predict COPD admissions.
- During winter, when COPD patients are most vulnerable, the Met Office produces a forecast of the risk of exacerbation.
- The forecast is used by healthcare providers to contact those COPD patients who are most at risk.
- By carrying out some simple preventative actions, patients may be able to prevent their condition becoming worse and reduce their risk of going to hospital.

How patients can use this information

- By keeping a diary throughout the year to record how their symptoms vary with the seasons, COPD patients can learn when they are most at risk of exacerbation.
- COPD patients could also note how certain weather conditions and infections affect their symptoms.
- In the winter, COPD patients should keep their houses warm (21°C in the living room and 18°C in the bedroom), keep physically active, wrap up to keep warm outside, and avoid infections.
- In the summer, COPD patients should stay out of the heat and keep cool.
- If COPD patients feel anxious or depressed, they should seek help from their local healthcare services.

Future work

- The Met Office is continually working to improve its understanding of how COPD varies during the year, and how COPD is affected by the environment.
- The Met Office is publishing its work in academic journals, to inform healthcare staff everywhere of the seasonal variation in the risk of COPD exacerbation.
- The Met Office is also working with NHS staff to find the best way of using its understanding of the seasonal variation in COPD, to improve health provision to patients.

Further information

Health Forecasting at the Met Office
www.metoffice.gov.uk/health

Contact the Met Office
health@metoffice.gov.uk

Data sources: Hospital Episode Statistics; RCGP infectious disease consultations; Quality Outcomes Framework list sizes.