Increased risk of severe exacerbations of COPD: a multi-database cohort study

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Why did we perform this research?

- Risk of severe CV events increases following severe exacerbations of COPD.
- The durations of increased risk and the extent of moderate exacerbations of COPD are unclear.
- Aim: To quantify the risk of a severe CV event or death in different periods of time following a moderate or severe exacerbation of COPD.

How did we perform this research?

- Study design:
  - Selection period (2014-2016):
    - Identification of patients with COPD
  - Follow-up:
    - Patients with COPD were identified in secondary databases between 2014-2018 in Canada, Germany, the NL, and Spain.
    - Follow-up started upon the first identified COPD code and lasted until experiencing a CV event or death, loss to follow-up, or 31 December 2019.
- Analysis:
  - Time-dependent Cox models compared the outcome risk incrementally over 12 months following the onset of an exacerbation (“exposed” periods) versus periods of time without an exacerbation (“unexposed”).
  - Adjusted hazard ratios (AHRs) were estimated for each time period and compared across countries.

What did we find?

Figure 1. Baseline demographics of patients with COPD

- Adjusted HR (95% CIs)
  - Canada
    - Within 31–180 days
      - Total: 1.27 (1.17, 1.37)
    - Within 15–30 days
      - Total: 1.13 (1.06, 1.20)
    - Within 8–14 days
      - Total: 1.27 (1.17, 1.37)
    - Within 1–7 days
      - Total: 1.17 (1.05, 1.32)
  - Germany
    - Within 31–180 days
      - Total: 1.62 (1.26, 2.08)
    - Within 15–30 days
      - Total: 1.13 (1.06, 1.20)
    - Within 8–14 days
      - Total: 1.27 (1.17, 1.37)
    - Within 1–7 days
      - Total: 1.17 (1.05, 1.32)
  - Spain
    - Within 31–180 days
      - Total: 2.78 (2.33, 3.32)
    - Within 15–30 days
      - Total: 1.17 (1.05, 1.32)
    - Within 8–14 days
      - Total: 2.51 (1.32, 4.76)
    - Within 1–7 days
      - Total: 1.17 (1.05, 1.32)
  - The NL
    - Within 31–180 days
      - Total: 5.54 (5.21, 5.89)
    - Within 15–30 days
      - Total: 1.17 (1.05, 1.32)
    - Within 8–14 days
      - Total: 5.61 (5.30, 5.93)
    - Within 1–7 days
      - Total: 1.17 (1.05, 1.32)

Figure 2. Proportions of patients with exacerbations during study follow-up

- Patients experienced a markedly elevated risk of a severe CV event or death following a moderate exacerbation or a severe exacerbation across various countries and healthcare systems.

Figure 3. Proportions of patients who died (all-cause) or had a CV event during study follow-up

- These data highlight the impact that exacerbations beyond longs and, therefore, the importance of reducing the risk of exacerbations.

How might this impact current clinical practice?

- Patients experience a markedly elevated risk of a severe CV event or death following either a moderate or a severe exacerbation across various countries and healthcare systems.
- The increase in risk persisted for a minimum of 30 days following a moderate exacerbation, and for at least a year following a severe exacerbation.
- The importance of reducing the risk of exacerbations.

Disclosures

CFP: presentations and/or scientific advisory boards (Atrys, AsthmaCare, Boehringer Ingelheim, Chiesi, Cobi, Becton, Gaultoucin, Grifols, Galapagos, Genzyme, Mobicast, Merck, Novartis, Novo Nordisk, Parexel, Santen, Sanofi, Genzyme/patients Advocates, Boehringer Ingelheim, Chiesi, Gaultoucin, GWPharmaceuticals, Genzyme/patients Advocates, Boehringer Ingelheim, Chiesi, Gaultoucin, Merck, Novartis, Parexel, Santen, Sanofi, patients Advocates); consulting fees (AstraZeneca, Boehringer Ingelheim, Chiesi, Gaultoucin, Merck, Novartis, Parexel, Santen, Sanofi, patients Advocates); honoraria for speaking (AstraZeneca, Boehringer Ingelheim, Chiesi, Gaultoucin, Merck, Novartis, Parexel, Santen, Sanofi, patients Advocates).

Figure 4. Hazard ratio of CV events/death following a moderate exacerbation or a severe exacerbation of COPD

- Within 1–7 days
  - Canada: 1.26 (0.93, 1.72)
  - Germany: 1.26 (0.93, 1.72)
  - Spain: 1.47 (1.40, 1.55)
  - The NL: 1.17 (1.05, 1.32)
- Within 8–14 days
  - Canada: 1.17 (1.05, 1.33)
  - Germany: 1.27 (1.17, 1.37)
  - Spain: 1.27 (1.17, 1.37)
  - The NL: 1.17 (1.05, 1.32)
- Within 15–30 days
  - Canada: 1.17 (1.05, 1.32)
  - Germany: 1.27 (1.17, 1.37)
  - Spain: 1.27 (1.17, 1.37)
  - The NL: 1.17 (1.05, 1.32)
- Within 31–180 days
  - Canada: 1.17 (1.05, 1.32)
  - Germany: 1.27 (1.17, 1.37)
  - Spain: 1.27 (1.17, 1.37)
  - The NL: 1.17 (1.05, 1.32)