

Purpose



To Assess the Impact of Exacerbation Burden on Lung Function Trajectory in a Broad Asthma Population

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Rationale

- Progressive deterioration of lung function can result in **severe asthma** and **permanent airflow obstruction**.¹
- Severe **asthma exacerbations** may be a cause; however, previous studies are small and/or inconclusive.^{2,3}



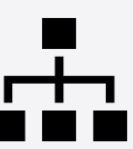
Aim

Assess the association between exacerbation burden and lung function decline in a broad asthma patient population



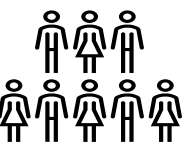
Study Design

Observational historical cohort



Data source

Optimum Patient Care Research Database UK: Quality controlled longitudinal primary care clinical data (<https://opcrd.co.uk/>)



109,182 patients with asthma:

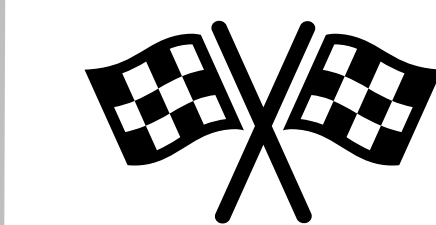
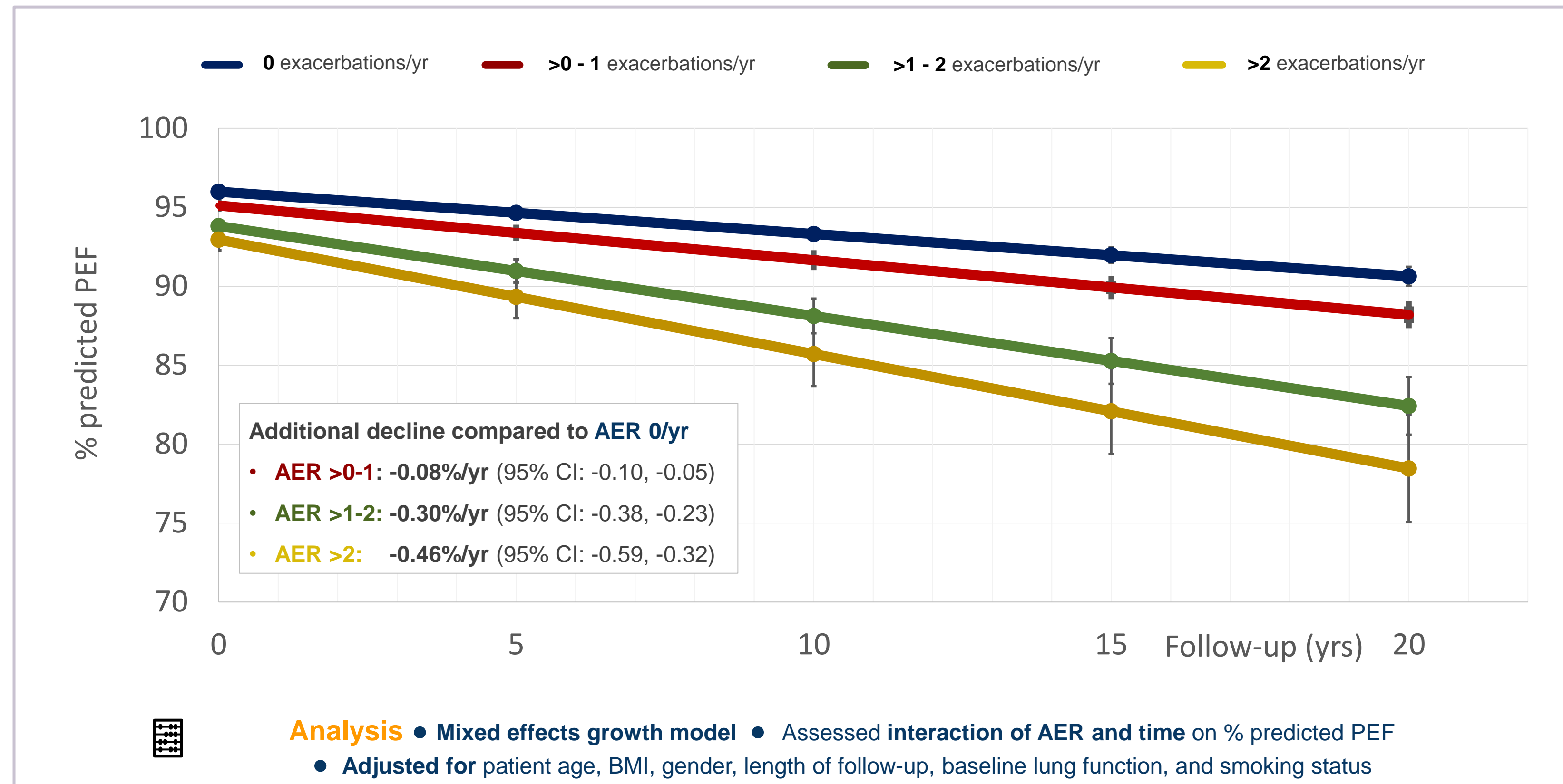
- Quality outcomes framework (QoF)-defined asthma diagnosis⁴
- 2+ asthma prescriptions during follow-up
- No COPD at baseline
- 5+ years of follow-up and 3+ peak expiratory flow (PEF) readings on or after 18th year birthday.
- Baseline = 1st eligible PEF reading



Outcome

Slope of percent predicted PEF⁵

Long term lung function declines **significantly faster** in asthma patients experiencing exacerbations compared to those who do not.



Conclusions

- Largest study of exacerbations and decline in a broad asthma population**
- Adjusts for other risk factors for decline, addresses key evidence gaps**
- Treating exacerbations may have long term benefit on lung function**



Exposure

Annual exacerbation rate (AER)

- Total exacerbations/total years of follow-up

Definition of exacerbation⁶:

- Asthma related hospital visit/stay or acute prescription for 3+ days of prednisolone

Patients with **faster lung function decline** tended to be **older** and **sicker** at baseline.

Characteristics	Overall 100% (n=109,182)	AER 0 40.4% (n=44,107)	AER >0-1 55.8% (n=60,927)	AER >1-2 3.0% (n=3,236)	AER 2+ 0.8% (n=912)
Median age at baseline (IQR)	42 (30-55)	39 (28-53)	43 (32-57)	50 (37-61)	47 (37-60)
% Male (n)	40.94% (44,697)	47.1% (20,791)	37.1% (22,577)	31.1% (1007)	35.3% (322)
Median years of follow-up (IQR)	10.4 (7.5 – 14.1)	9.3 (6.9-12.8)	11.2 (8.1-15.1)	10.9 (7.9-14.7)	10.6 (7.7-14.1)
Median BMI at baseline (IQR)	27.0 (24.0-30.9)	26.3 (23.5-29.9)	27.5 (24.3-31.6)	28.1 (24.6-32.6)	28.1 (24.4-32.9)
% Non-smoker (n)	50.9% (38,287)	53.9% (16,637)	49.0% (20,388)	45.9% (983)	45.7% (279)
% Ex-smoker (n)	26.7% (20,120)	25.5% (7865)	27.5% (11,436)	29.7% (637)	29.8% (182)
% Current smoker (n)	22.4% (16,873)	20.7% (6381)	23.6% (9818)	24.4% (524)	24.6% (150)
Median exacerbations at baseline (IQR)	0.2 (0.6)	0.00 (0-0)	0.0 (0-0)	0.0 (0-1)	1.0 (0-3)
Median SABA prescriptions at baseline (IQR)	2 (1-4)	2 (1-4)	2 (1-5)	3 (2-7)	5 (2-9)
Median ICS dosage/year over follow-up in mg (IQR)	95,166.1 (33,543.4-203,418.9)	59,096.6 (17,762.1-138,702.5)	117,882.9 (48,820.02-231,367.8)	28,6157.7 (16,3051.4-453,617.8)	38,5242.5 (218,992.6-579,581.8)

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Acknowledgments: This study was conducted by Optimum Patient Care Global Limited, and co-funded by OPC Global and AstraZeneca.

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