**Appendix**

**Statistics**

**Poisson regression**

A key assumption of Poisson data is that the variance of the outcome measure (number of asthma exacerbations) should equal its mean. A common problem encountered with Poisson data is overdispersion, where the variance of the outcome measure is greater than its mean [[1](#_ENREF_1)]. Poisson models were investigated and corrected for overdispersion where necessary [[2](#_ENREF_2)]. The exposure variable in Poisson regression was the number of days in study. Incidence (episodes per unit time) was expressed per-person-years exposure 95% confidence intervals were based on the robust variance. The small amount of missing values were analysed by case wise deletion.

**References**

1. Cox DR. Some remarks on overdispersion. . *Biometrika* 1983: 70: 269-274.

2. Dean CB, Lawless, J.F. Tests for detecting overdispersion in Poisson regression models. *Journal of the American Statistical Association* 1989: 84: 467-472.

**Results**

**Appendix Table 1.** Average number of symptoms over the study period.

Symptomatic Median (25th/75th centiles)

Cough 429 (222, 612)

Wheeze 435 (220, 622)

Breathless 427 (221, 623)

Chest tightness 439 (215, 620)

**Appendix Table 2.** Frequency and characteristics of asthma patients for one or more symptoms with a severity cut-point ≥2.

Any one symptom (n=91)

Age (y) 56 (47, 63)

BMI (Kg/m2) 26.9 (24.2, 31.2)

FEV1 (% predicted) 71.2 (64.6, 77.1)

Sex (F) 57%

Any two symptoms (n=45)

Age (y) 56 (49, 61)

BMI (Kg/m2) 29.4 (26.8, 32.4)

FEV1 (% predicted) 72.1 (65.1, 79.1)

Sex (F) 67%

Any three symptoms (n=24)

Age (y) 54.5 (47, 60.5)

BMI (Kg/m2) 26.8 (23.6, 30.2)

FEV1 (% predicted) 70.4 (67.5, 85.0)

Sex (F) 79%

All four symptoms (n=42)

Age (y) 54.5 (49, 62)

BMI (Kg/m2) 25.1 (21.8, 29.7)

FEV1(% predicted) 69.5 (64.6, 77.8)

Sex (F) 71%

Abbreviations: n – number of patients; y – years; BMI – body mass index; Kg/m2 – kilogram per metres square; F – female. Data represented as median (25th/75th centiles).