Appendix 1

1) Comparison of characteristics from higher (higher than the median of 51 patients per practice) and lower recruiting practices

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|  | High recruiting practices (n=131 practices) | Lower recruiting practices |
| Age 60+ years | 8038/21711 (37.0%) | 2805/7068 (39.7%) |
| Female | 12924/21708 (59.5%) | 4142/7066 (58.6%) |
| Duration illness <7 days | 10485/21711 (48.3%) | 3473/7068 (49.1%) |
| Received pneumovax <10y | 4013/21711 (18.5%) | 1260/7068 (17.8%) |
| Ever smoked | 11482/21388 (53.7%) | 3636/6923 (52.5%) |
| Any co-morbidity | 9766/21711 (45.0%) | 3294/7068 (46.6%) |
| Lung co-morbidity | 5684/21711 (26.2%) | 1753/7068 (24.8%) |
| On steroids or bronchodilators | 5011/20907 (24.0%) | 1500/6563 (22.9%) |
| Living in top decile deprivation area (most deprived\*) | 4392/21711 (20.0%) | 1347/7068 (19.1%) |
| *Symptoms* |  |  |
| Shortness of breath | 14103/21668 (65.1%) | 4345/6993 (62.1%) |
| Fever | 8204/21684 (37.8%) | 2745/7028 (39.1%) |
| Chills | 6906/21676 (31.9%) | 2217/7025 (31.6%) |
| Chest pain | 8065/21686 (37.2%) | 2547/7022 (36.3%) |
| Confusion | 1450/21702 (6.7%) | 406/7059 (5.8%) |
| Coryza | 11938/21672 (55.1%) | 3754/7010 (53.6%) |
| Headache | 10030/21678 (46.3%) | 3192/7017 (45.5%) |
| Muscle aches | 7952/21675 (36.7%) | 2519/7023 (35.8%) |
| Diarrhoea | 1916/21705 (8.8%) | 586/7049 (8.3%) |
| Sputum: purulent | 13743/21709 (63.3%) | 4444/7066 (62.9%) |
| bloody/rusty | 749/21709 (3.5%) | 360/7066 (3.7%) |
|  |  |  |
| *Clinical examination* |  |  |
| Severity assessment > 5/10 | 8480/21711 (39.1%) | 3378/7068 (47.8%) |
| Resp rate > 24/min | 2058/21620 (9.5%) | 812/7042 (11.5%) |
| Temp > 37.8°C | 1238/21706 (5.7%) | 405/7052 (5.7%) |
| Pulse > 100/min | 2126/21703 (9.8%) | 662/7064 (9.4%) |
| O2sat < 95% | 1209/17696 (6.7%) | 480/5722 (8.4%) |
| SBP< 90 or DBP < 60 mmHg | 1651/21711 (7.6%) | 537/7068 (7.6%) |
| Crackles | 9355/21706 (43.1%) | 2854/7065 (40.4%) |
| Bronchial breathing | 1512/21703 (7.0%) | 644/7063 (9.1%) |
| Wheeze | 5295/21704 (24.4%) | 1753/7065 (24.8%) |

2) Assessment of covariate balance in the stratified propensity scores.

Covariate balance was assessed by examining the standardised mean differences and a difference of 0.10 or more taken to indicate substantial imbalance (Normand ST, Landrum M, Guadagnoli E, et al. Validating recommendations for coronary angiography following acute myocardial infarction in the elderly: a matched analysis using propensity scores. [J Clin Epidemiol.](https://www.ncbi.nlm.nih.gov/pubmed/11297888) 2001 Apr;54(4):387-98.) Our main concern was the impact of residual confounding for immediate antibiotics. The table below shows that for immediate antibiotics, adequate covariate balance was obtained and if there was residual confounding, it is more likely to come from unmeasured confounders. With delayed prescribing, the covariate balance for most but not all covariates improved but there was still a risk of residual confounding (so it is possible we have underestimated the impact of delayed prescription on complications). It was not possibly to improve covariate balance further by increasing the number of strata or using another propensity score method (e.g. inverse probability weighting), although we did try this.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | No antibiotics compared to Immediate antibiotics | | No antibiotics compared to Delayed antibiotics | |
|  | **Standardised mean difference before propensity score stratification** | **Standardised mean difference after propensity score stratification** | **Standardised mean difference before propensity score stratification** | **Standardised mean difference after propensity score stratification** |
| Age 60+ years | 0.288 | 0.066 | 0.086 | 0.011 |
| Female | -0.055 | -0.020 | -0.032 | 0.039 |
| Received pneumovax <10y | 0.168 | 0.027 | 0.045 | 0.045 |
| Ever smoked | 0.114 | 0.007 | 0.006 | 0.019 |
| Lung co-morbidity | 0.214 | 0.022 | 0.065 | 0.047 |
| On steroids or bronchodilators | 0.221 | 0.020 | 0.058 | 0.065 |
| *Symptoms* |  |  |  |  |
| Shortness of breath | 0.357 | 0.025 | 0.142 | 0.061 |
| Fever | 0.282 | 0.006 | 0.186 | -0.076 |
| Chills | 0.235 | 0.041 | 0.143 | 0.007 |
| Chest pain | 0.070 | -0.000 | 0.041 | 0.018 |
| Confusion | 0.066 | -0.010 | 0.017 | -0.025 |
| Coryza | 0.002 | -0.002 | 0.097 | -0.096 |
| Headache | 0.108 | -0.001 | 0.127 | -0.077 |
| Muscle aches | 0.140 | -0.001 | 0.064 | 0.003 |
| Diarrhoea | 0.063 | 0.013 | 0.054 | -0.004 |
| Sputum colour | 0.450 | 0.016 | 0.344 | -0.093 |
|  |  |  |  |  |
| *Clinical examination* |  |  |  |  |
| Severity assessment > 5/10 | 1.055 | -0.007 | 0.425 | 0.113 |
| Resp rate > 24/min | 0.226 | 0.029 | 0.031 | 0.133 |
| Temp > 37.8°C | 0.197 | 0.013 | 0.055 | 0.052 |
| Pulse > 100/min | 0.199 | 0.010 | 0.049 | 0.070 |
| O2sat < 95% | 0.297 | 0.020 | 0.061 | 0.012 |
| SBP< 90 or DBP < 60 mmHg | -0.057 | -0.039 | -0.084 | -0.042 |
| Crackles | 1.782 | 0.041 | 0.652 | 0.047 |
| Bronchial breathing | 0.396 | 0.022 | 0.165 | 0.055 |
| Wheeze | 0.661 | 0.040 | 0.181 | 0.132 |