**Table S5** Top 20 comorbidities of patients with asthma according to asthma severity and control state

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Severity (N,%)** | | | | | | **Hospitalization rate (N,%)** | | | | | | | | | **Control status in severe asthma (N,%)** | | | | | |
| Non-severe asthma (N = 1,595,847) | | | Severe asthma (N = 46,919) | | | Never (N = 1,609,936) | | | 1–2 (N = 32,084) | | | ≥ 3 (N = 746) | | | Uncontrolled (N = 14,686) | | | Controlled (N = 32,233) | | |
| 1 | Bronchitis | 1,321,549 | 82.99 | Bronchitis | 34,526 | 73.58 | Vasomotor and allergic rhinitis | 1,314044 | 81.62 | Bronchitis | 26,030 | 81.13 | Bronchitis | 597 | 80.03 | Vasomotor and allergic rhinitis | 11,654 | 79.35 | Bronchitis | 23,065 | 64.85 |
| 2 | Vasomotor and allergic rhinitis | 1,304,123 | 81.89 | URI | 30,411 | 64.81 | Bronchitis | 1,329,448 | 82.58 | Vasomotor and allergic rhinitis | 19,382 | 60.41 | Pneumonia | 587 | 78.69 | Bronchitis | 11,461 | 78.04 | Vasomotor and allergic rhinitis | 18,206 | 56.48 |
| 3 | URI | 1,267,096 | 79.57 | Vasomotor and allergic rhinitis | 29,860 | 63.64 | URI | 1,275,442 | 79.22 | URI | 21,636 | 67.44 | COPD | 576 | 77.21 | URI | 9,657 | 65.76 | URI | 20,754 | 58.35 |
| 4 | GERD | 705,407 | 44.30 | HTN | 19,422 | 41.39 | GERD | 705,522 | 43.82 | Pneumonia | 19,016 | 59.27 | Vasomotor and allergic rhinitis | 560 | 75.07 | GERD | 7,561 | 51.48 | HTN | 12,612 | 39.12 |
| 5 | HTN | 566,661 | 35.58 | GERD | 18,693 | 39.84 | HTN | 567,971 | 35.28 | GERD | 18,080 | 56.35 | GERD | 498 | 66.76 | COPD | 7,314 | 49.80 | GERD | 11,132 | 34.54 |
| 6 | Dyslipidemia | 538,636 | 33.82 | COPD | 17,870 | 38.09 | Dyslipidemia | 540,225 | 33.56 | HTN | 17,635 | 54.97 | HTN | 477 | 63.94 | HTN | 6,828 | 46.47 | Dyslipidemia | 10,117 | 31.39 |
| 7 | Contact Dermatitis | 481,516 | 30.24 | Dyslipidemia | 15,732 | 33.53 | Contact Dermatitis | 485,078 | 30.13 | COPD | 16,159 | 50.36 | URI | 429 | 57.51 | Dyslipidemia | 5,615 | 38.23 | COPD | 10,556 | 32.75 |
| 8 | Conjunctivitis | 451,379 | 28.34 | Conjunctivitis | 12,690 | 27.05 | Conjunctivitis | 455,884 | 28.32 | Dyslipidemia | 13,015 | 40.56 | Chronic Bronchitis | 367 | 49.20 | Pneumonia | 5,210 | 35.47 | Conjunctivitis | 8,587 | 26.64 |
| 9 | Gastric ulcer | 406,218 | 25.51 | Contact Dermatitis | 12,593 | 26.84 | Gastric ulcer | 407,253 | 25.30 | Functional intestinal disorders | 11,228 | 35.00 | Functional intestinal disorders | 332 | 44.50 | Chronic Bronchitis | 4,599 | 31.32 | Contact Dermatitis | 8,356 | 25.92 |
| 10 | Functional intestinal disorders | 366,101 | 22.99 | DM | 10,388 | 22.14 | Functional intestinal disorders | 365,957 | 22.73 | Chronic Bronchitis | 11,200 | 34.91 | Dyslipidemia | 328 | 43.97 | Contact Dermatitis | 4,237 | 28.85 | DM | 7,331 | 22.74 |
| 11 | DM | 305,278 | 19.17 | Chronic Bronchitis | 11,588 | 24.70 | DM | 305,282 | 18.96 | DM | 10,066 | 31.37 | DM | 318 | 42.63 | Conjunctivitis | 4,103 | 27.94 | Functional intestinal disorders | 7,047 | 21.86 |
| 12 | Urticaria | 289,077 | 18.15 | Pneumonia | 10,552 | 22.49 | Urticaria | 290,439 | 18.04 | Gastric ulcer | 9,947 | 31.00 | Sleep disorders | 262 | 35.12 | Functional intestinal disorders | 4,039 | 27.50 | Chronic bronchitis | 6,989 | 21.68 |
| 13 | Irritable bowel syndrome | 280,650 | 17.62 | Functional intestinal disorders | 11,086 | 23.63 | Irritable bowel syndrome | 282,041 | 17.52 | Contact Dermatitis | 9,273 | 28.90 | Gastric ulcer | 254 | 34.05 | Gastric ulcer | 4,003 | 27.25 | Gastric ulcer | 6,921 | 21.47 |
| 14 | Chronic Bronchitis | 274,247 | 17.22 | Gastric ulcer | 10,924 | 23.28 | Chronic Bronchitis | 274,592 | 17.06 | Conjunctivitis | 8,526 | 26.57 | Anxiety disorders | 226 | 30.29 | DM | 3,057 | 20.82 | Pneumonia | 5,342 | 16.57 |
| 15 | Arthritis | 271,300 | 17.04 | BPH | 7,993 | 17.04 | Arthritis | 272,027 | 16.90 | Sleep disorders | 7,900 | 24.62 | Contact Dermatitis | 215 | 28.82 | Urticaria | 2,985 | 20.33 | BPH | 5,329 | 16.53 |
| 16 | Keratitis | 266,912 | 16.76 | Keratitis | 7,630 | 16.26 | Keratitis | 269,703 | 16.75 | Anxiety disorders | 7,641 | 23.82 | Angina pectoris | 196 | 26.27 | Sleep disorders | 2,665 | 19.51 | Keratitis | 5,002 | 15.52 |
| 17 | Pneumonia | 259,962 | 16.32 | Arthritis | 7,623 | 16.25 | Chronic sinusitis | 262,758 | 16.32 | Arthritis | 6,966 | 21.71 | BPH | 184 | 24.66 | Arthritis | 2,714 | 19.44 | Arthritis | 4,909 | 15.23 |
| 18 | Chronic sinusitis | 260,906 | 16.38 | Sleep disorder | 6,857 | 14.61 | Pneumonia | 250,911 | 15.59 | Osteoporosis | 6,293 | 19.61 | Conjunctivitis | 182 | 24.40 | Anxiety disorders | 2,807 | 18.14 | Cataract | 4,951 | 13.92 |
| 19 | Anxiety disorder | 239,700 | 15.05 | Anxiety disorder | 6,851 | 14.60 | Anxiety disorder | 238,684 | 14.83 | Urticaria | 6,055 | 18.87 | Heart failure | 176 | 23.59 | BPH | 2,664 | 18.13 | Irritable bowel syndrome | 4,302 | 13.34 |
| 20 | Sleep disorder | 207,631 | 13.04 | Urticaria | 7,353 | 15.67 | Sleep disorder | 206,326 | 12.82 | Irritable bowel syndrome | 5,892 | 18.36 | Depressive disorder | 173 | 23.19 | Irritable bowel syndrome | 2,619 | 17.83 | Sleep disorders | 4,192 | 13.01 |

\* n, %

URI: Upper respiratory infection, HTN: hypertension, GERD: Gastroesophageal reflux disease, DM: diabetes mellitus, BPH: benign prostatic hyperplasia