

**Table S1** ICD-9-CM codes associated with respiratory-related visits.

| Code  | Disease                                                 |
|-------|---------------------------------------------------------|
| 460   | Acute nasopharyngitis                                   |
| 4610  | Acute sinusitis, Maxillary                              |
| 4611  | Acute sinusitis, Frontal                                |
| 4612  | Acute sinusitis, Ethmoidal                              |
| 4613  | Acute sinusitis, Sphenoidal                             |
| 4618  | Other acute sinusitis                                   |
| 4619  | Acute sinusitis, unspecified                            |
| 462   | Acute pharyngitis                                       |
| 463   | Acute tonsillitis                                       |
| 4640  | Acute laryngitis                                        |
| 46410 | Acute tracheitis without mention of obstruction         |
| 46411 | Acute tracheitis with obstruction                       |
| 46420 | Acute laryngotracheitis without mention of obstruction  |
| 46421 | Acute laryngotracheitis with obstruction                |
| 46430 | Acute epiglottitis without mention of obstruction       |
| 46431 | Acute epiglottitis with obstruction                     |
| 4650  | Acute laryngopharyngitis                                |
| 4658  | Acute upper respiratory infections other multiple sites |
| 4659  | Acute upper respiratory infections, unspecified site    |
| 4660  | Acute bronchitis                                        |
| 46611 | Acute bronchiolitis due to respiratory syncytial virus  |
| 46619 | Acute bronchiolitis due to other infectious organisms   |
| 4720  | Chronic rhinitis                                        |
| 4721  | Chronic pharyngitis                                     |
| 4722  | Chronic nasopharyngitis                                 |
| 4730  | Maxillary                                               |
| 4731  | Frontal                                                 |
| 4732  | Ethmoidal                                               |
| 4733  | Sphenoidal                                              |
| 4738  | Other chronic sinusitis                                 |
| 4739  | Unspecified sinusitis (chronic)                         |
| 47400 | Chronic tonsillitis                                     |
| 47401 | Chronic adenoiditis                                     |
| 47402 | Chronic tonsillitis and adenoiditis                     |
| 47410 | Hypertrophy of tonsils with adenoids                    |

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|-------|---------------------------------------------------------------------|
| 47411 | Hypertrophy of tonsils alone                                        |
| 47412 | Hypertrophy of adenoids alone                                       |
| 4742  | Adenoid vegetations                                                 |
| 4748  | Other chronic disease of tonsils and adenoids                       |
| 4749  | Unspecified chronic disease of tonsils and adenoids                 |
| 475   | Peritonsillar abscess                                               |
| 4760  | Chronic laryngitis                                                  |
| 4761  | Chronic laryngotracheitis                                           |
| 4770  | Allergic rhinitis due to pollen                                     |
| 4771  | Allergic rhinitis due to food                                       |
| 4778  | Allergic rhinitis due to other allergen                             |
| 4779  | Allergic rhinitis, cause unspecified                                |
| 4781  | Other diseases of nasal cavity and sinuses                          |
| 47820 | Unspecified disease of pharynx                                      |
| 47821 | Cellulitis of pharynx or nasopharynx                                |
| 47822 | Parapharyngeal abscess                                              |
| 47824 | Retropharyngeal abscess                                             |
| 47825 | Edema of pharynx or nasopharynx                                     |
| 47826 | Cyst of pharynx or nasopharynx                                      |
| 47829 | Other diseases of pharynx                                           |
| 47830 | Paralysis, unspecified                                              |
| 47831 | Paralysis of vocal cords or larynx Unilateral, partial              |
| 47832 | Paralysis of vocal cords or larynx Unilateral, complete             |
| 47833 | Paralysis of vocal cords or larynx Bilateral, partial               |
| 47834 | Paralysis of vocal cords or larynx Bilateral, complete              |
| 4784  | Polyp of vocal cord or larynx                                       |
| 4785  | Other diseases of vocal cords                                       |
| 4786  | Edema of larynx                                                     |
| 47870 | Unspecified disease of larynx                                       |
| 47871 | Cellulitis and perichondritis of larynx                             |
| 47874 | Stenosis of larynx                                                  |
| 47875 | Laryngeal spasm                                                     |
| 47879 | Other diseases of larynx                                            |
| 4788  | Upper respiratory tract hypersensitivity reaction, site unspecified |
| 4789  | Other and unspecified diseases of upper respiratory tract           |
| 4800  | Pneumonia due to adenovirus                                         |
| 4801  | Pneumonia due to respiratory syncytial virus                        |

|       |                                                                |
|-------|----------------------------------------------------------------|
| 4802  | Pneumonia due to parainfluenza virus                           |
| 4808  | Pneumonia due to other virus not elsewhere classified          |
| 4809  | Viral pneumonia, unspecified                                   |
| 481   | Pneumococcal pneumonia                                         |
| 4822  | Pneumonia due to Hemophilus influenzae                         |
| 48230 | Pneumonia due to Streptococcus, unspecified                    |
| 48231 | Pneumonia due to Streptococcus Group A                         |
| 48232 | Pneumonia due to Streptococcus Group B                         |
| 48239 | Pneumonia due to Streptococcus, other Streptococcus            |
| 48240 | Pneumonia due to Staphylococcus, unspecified                   |
| 48241 | Methicillin susceptible pneumonia due to Staphylococcus aureus |
| 48249 | Other Staphylococcus pneumonia                                 |
| 48281 | Pneumonia due to Anaerobes                                     |
| 48282 | Pneumonia due to Escherichia coli                              |
| 48283 | Pneumonia due to other gram-negative bacteria                  |
| 48284 | Legionnaires' disease                                          |
| 48289 | Other specified bacteria                                       |
| 4829  | Bacterial pneumonia unspecified                                |
| 4830  | Mycoplasma pneumoniae                                          |
| 4831  | Pneumonia due to Chlamydia                                     |
| 4838  | Pneumonia due to other specified organism                      |
| 4841  | Pneumonia in cytomegalic inclusion disease                     |
| 4846  | Pneumonia in aspergillosis                                     |
| 4847  | Pneumonia in other systemic mycoses                            |
| 4848  | Pneumonia in other infectious diseases classified elsewhere    |
| 485   | Bronchopneumonia, organism unspecified                         |
| 486   | Pneumonia, organism unspecified                                |
| 4870  | Influenza with pneumonia                                       |
| 4871  | Influenza with other respiratory manifestations                |
| 4878  | Influenza with other manifestations                            |
| 490   | Bronchitis, not specified as acute or chronic                  |
| 4910  | Simple chronic bronchitis                                      |
| 4911  | Mucopurulent chronic bronchitis                                |
| 49120 | Obstructive chronic bronchitis without exacerbation            |
| 49121 | Obstructive chronic bronchitis with (acute) exacerbation       |
| 4918  | Other chronic bronchitis                                       |
| 4919  | Unspecified chronic bronchitis                                 |

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|-------|-------------------------------------------------------------------------|
| 4920  | Emphysematous bleb                                                      |
| 4928  | Other emphysema                                                         |
| 49300 | Extrinsic asthma                                                        |
| 49301 | Extrinsic asthma with status asthmaticus                                |
| 49302 | Extrinsic asthma with (acute) exacerbation                              |
| 49310 | Intrinsic asthma                                                        |
| 49311 | Intrinsic asthma with status asthmaticus                                |
| 49312 | Intrinsic asthma with (acute) exacerbation                              |
| 49320 | Chronic obstructive asthma                                              |
| 49321 | Chronic obstructive asthma with status asthmaticus                      |
| 49322 | Chronic obstructive asthma with (acute) exacerbation                    |
| 4950  | Farmers' lung                                                           |
| 4951  | Bagassosis                                                              |
| 4952  | Bird-fanciers' lung                                                     |
| 4953  | Suberosis                                                               |
| 4954  | Malt workers' lung                                                      |
| 4955  | Mushroom workers' lung                                                  |
| 4956  | Maple bark-strippers' lung                                              |
| 4957  | Ventilation pneumonitis                                                 |
| 4958  | Other specified allergic alveolitis and pneumonitis                     |
| 4959  | Unspecified allergic alveolitis and pneumonitis                         |
| 496   | Chronic airway obstruction, not elsewhere classified                    |
| 500   | Coal workers' pneumoconiosis                                            |
| 501   | Asbestosis                                                              |
| 502   | Pneumoconiosis due to other silica or silicates                         |
| 503   | Pneumoconiosis due to other inorganic dust                              |
| 504   | Pneumonopathy due to inhalation of other dust                           |
| 505   | Pneumoconiosis, unspecified                                             |
| 5060  | Bronchitis and pneumonitis due to fumes and vapors                      |
| 5061  | Acute pulmonary edema due to fumes and vapors                           |
| 5062  | Upper respiratory inflammation due to fumes and vapors                  |
| 5063  | Other acute and subacute respiratory conditions due to fumes and vapors |
| 5064  | Chronic respiratory conditions due to fumes and vapors                  |
| 5069  | Unspecified respiratory conditions due to fumes and vapors              |
| 5070  | Pneumonitis due to inhalation of food or vomitus                        |
| 5071  | Pneumonitis due to inhalation of oils and essences                      |
| 5078  | Pneumonitis due to other solids and liquids                             |

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|-------|-----------------------------------------------------------------------------------|
| 5080  | Acute pulmonary manifestations due to radiation                                   |
| 5081  | Chronic and other pulmonary manifestations due to radiation                       |
| 5088  | Respiratory conditions due to other specified external agents                     |
| 5089  | Respiratory conditions due to unspecified external agent                          |
| 5100  | Empyema with fistula                                                              |
| 5109  | Empyema without mention of fistula                                                |
| 5110  | Pleurisy without mention of effusion or current tuberculosis                      |
| 5111  | Pleurisy with effusion, with mention of a bacterial cause other than tuberculosis |
| 5118  | Other specified forms of effusion, except tuberculous                             |
| 5119  | Unspecified pleural effusion                                                      |
| 5120  | Spontaneous tension pneumothorax                                                  |
| 5128  | Other spontaneous pneumothorax                                                    |
| 5130  | Abscess of lung                                                                   |
| 5131  | Abscess of mediastinum                                                            |
| 514   | Pulmonary congestion and hypostasis                                               |
| 515   | Postinflammatory pulmonary fibrosis                                               |
| 5160  | Pulmonary alveolar proteinosis                                                    |
| 5163  | Idiopathic fibrosing alveolitis                                                   |
| 5168  | Other specified alveolar and parietoalveolar pneumonopathies                      |
| 5169  | Unspecified alveolar and parietoalveolar pneumonopathy                            |
| 5171  | Rheumatic pneumonia                                                               |
| 5172  | Lung involvement in systemic sclerosis                                            |
| 5178  | Lung involvement in other diseases classified elsewhere                           |
| 5180  | Pulmonary collapse                                                                |
| 5181  | Interstitial emphysema                                                            |
| 5182  | Compensatory emphysema                                                            |
| 5183  | Pulmonary eosinophilia                                                            |
| 5184  | Acute edema of lung, unspecified                                                  |
| 5185  | Pulmonary insufficiency following trauma and surgery                              |
| 5186  | Allergic bronchopulmonary aspergillosis                                           |
| 51881 | Acute respiratory failure                                                         |
| 51882 | Other pulmonary insufficiency, not elsewhere classified                           |
| 51883 | Chronic respiratory failure                                                       |
| 51884 | Acute and chronic respiratory failure                                             |
| 51889 | Other diseases of lung, not elsewhere classified                                  |
| 5191  | Other diseases of trachea and bronchus, not elsewhere classified                  |
| 5192  | Mediastinitis                                                                     |

|       |                                                                |
|-------|----------------------------------------------------------------|
| 5193  | Other diseases of mediastinum, not elsewhere classified        |
| 5198  | Other diseases of respiratory system, not elsewhere classified |
| 5199  | Unspecified disease of respiratory system                      |
| 7806  | Fever                                                          |
| 78079 | Other malaise and fatigue                                      |
| 78321 | Loss of weight                                                 |
| 78600 | Respiratory abnormality, unspecified                           |
| 78602 | Orthopnea                                                      |
| 78605 | Shortness of breath                                            |
| 78606 | Tachypnea                                                      |
| 78607 | Wheezing                                                       |
| 78609 | Other                                                          |
| 7861  | Stridor                                                        |
| 7862  | Cough                                                          |
| 7863  | Hemoptysis                                                     |
| 7864  | Abnormal sputum                                                |
| 78650 | Chest pain, unspecified                                        |
| 78651 | Precordial pain                                                |
| 78652 | Painful respiration                                            |
| 78659 | Other                                                          |
| 7866  | Swelling, mass, or lump in chest                               |
| 7867  | Abnormal chest sounds                                          |
| 7869  | Other symptoms involving respiratory system and chest          |