

## ***Episode-of-Care for Ambulatory Pneumonia Episode***

### **Measure Description**

Resource use and costs associated with management of an adult pneumonia episode following an initial trigger E&M visit with primary diagnosis of pneumonia. The initial E&M visit for pneumonia is defined by requiring that there be no E&M visit for pneumonia within the prior 6 weeks. An episode is defined to last 14 days (*explore 6 weeks also*). To limit sample to community acquired pneumonia (CAP), exclude all individuals with any hospital discharge (require length of stay greater than two days only when not admitted for pneumonia) within 90 days prior to the trigger outpatient visit and also will exclude individuals identified as being in a nursing home prior to the trigger visit. Also exclude all individuals hospitalized with pneumonia within three days of the trigger visit (these individuals will be included in the CAP Hospitalization Episode).

### **Required Data Elements**

Administrative claims data

### **Calculation**

For patients meeting inclusion criteria, determine pneumonia-related resource use and costs during the episode. Prices from a standard price list will be applied to the pneumonia-related resource use to estimate the costs of the episode of care related to pneumonia. Resources will be defined for ten categories: 1) inpatient facility; 2) evaluation and management; 3) procedures; 4) imaging; 5) tests; 6) DME; 7) other drugs and services; 8) medications; 9) outpatient facility; and 9) other. For inpatient facility costs, the standard cost is based on a per diem cost for a DRG and will be multiplied by the length of stay for the event.

### **Episode Definition**

Pneumonia-related costs over a 2-week (14-day) period following the trigger ambulatory E&M visit. Trigger visits include only cases with pneumonia as primary diagnosis.

### **Rationale**

The Institute of Medicine and AQA have identified pneumonia as one of 20 conditions that should be considered priority areas in need of quality improvement based on its relevance to a significant volume of patients, its impact on those patients, and the perception of opportunity to significantly improve the quality and efficiency of related care. There may be up to 5 to 6 million cases of community-acquired pneumonia (CAP)

diagnosed annually in the United States, accounting for approximately 1 million hospitalizations and approximately 10 million physician visits. It is estimated that the annual cost of treating CAP in the United States is \$12.2 billion.<sup>1</sup> Pneumonia is the second most common reason for hospitalization after childbirth.<sup>2</sup>

Major decisions regarding management of CAP revolve around the initial assessment of severity, which will help determine whether hospitalization is necessary and the level of resources used.<sup>3</sup> Ambulatory treatment of pneumonia is thus distinguished from CAP hospitalization episodes by whether there is a hospitalization within the first three days after an initial visit to a physician or emergency department. Individuals with prior hospitalizations within 90 days (>2 days LOS or pneumonia diagnosis with any LOS) or NH residence are excluded to eliminate hospital/institution acquired pneumonias.

The ambulatory care pneumonia episode will be attributed at the individual physician level to the physician making the trigger E&M visit diagnosis, because this physician will make the major resource use decisions at the beginning of the episode.

### **Resource Use Measure**

Pneumonia-related resource use/costs

- Inpatient Facility
- Evaluation and Management
- Procedures
- Imaging
- Tests
- DME
- Pharmacy
- OP Facility Costs
- Exceptions/Unclassified
- Other Services

### **Eligible Population**

#### **Enrollment Criteria**

Continuous medical and pharmacy benefit enrollment for two years with no more than one gap in enrollment of more than 45 days during each year of the continuous enrollment.

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1G. Colice et al. Treatment Costs of Community-Acquired Pneumonia in an Employed Population. Chest 2004; 125: 2140-2145.

<sup>2</sup> “Pneumonia Most Common Reason for Hospitalization.” AHRQ.  
<http://www.ahrq.gov/news/nn/nn070208.htm>.

<sup>3</sup> L.Madel et al. Infectious Diseases Society of America/American Thoracic Society Consensus Guidelines on the Management of Community-Acquired Pneumonia in Adults. CID 2007; 44: S27-72.

<b>Age</b>	Patients at least 18 years of age or older during the identification year.
<b>Inclusion Criteria</b>	Occurrence of one of the diagnostic codes in Table PNEU-A for E&M visit during the identification period.
<b>Exclusion</b>	<p>Patient excluded if:</p> <p>Discharged from hospital after greater than 2 day stay for any reason within 90 days prior to trigger E&amp;M visit or discharged within 90 days prior to trigger E&amp;M (any LOS) with a CAP primary diagnosis.</p> <p>Had an E&amp;M visit for pneumonia (see Table PNEU-A) within the past 6 weeks prior to trigger event.</p> <p>Hospitalized within 3 days subsequent to trigger ambulatory care trigger visit (then potentially included in an inpatient pneumonia episode).</p> <p>Persons meeting the following criteria are also excluded:</p> <ul style="list-style-type: none"> <li>- Standard NCQA exclusions</li> <li>- all lung cancer during identification (prior) or measurement year</li> <li>- Exclude hospice if during prior 6 months.</li> <li>- Exclude cystic fibrosis</li> </ul>

**Table PNEU-A: Diagnostic Codes for Pneumonia Trigger E&M Visit for Pneumonia Episode (Primary diagnoses)**

Description	ICD-9 Code
<i>Primary diagnosis of pneumonia</i>	<i>480-483.8, 485-486, 487.0</i>
Viral pneumonia	480.xx
Pneumonia due to adenovirus	480.0
Pneumonia due to respiratory syncytial virus	480.1
Pneumonia due to parainflenza virus	480.2
Pneumonia due to sars associated coronavirus	480.3
Pneumonia due to virus not elsewhere classified	480.8
Viral pneumonia unspecified	480.9
Pneumococcal pneumonia	481.xx
Other bacterial pneumonia	482.xx
Pneumonia due to klebsiella pneumoniae	482.0
Pneumonia due to pseudomonas	482.1
Pneumonia due to hemophilus influenzae	482.2
Pneumonia due to streptococcus	482.3
Pneumonia due to staphylococcus	482.4
Pneumonia due to other specified bacteria	482.8
Bacterial pneumonia unspecified	482.9

Pneumonia due to other specified organism	483
Pneumonia due to mycoplasma pneumoniae	483.0
Pneumococcal pneumonia	483.1
Other bacterial pneumonia	483.8
Bronchopneumonia, organism unspecified	485
Pneumonia, organism unspecified	486
Influenza w. pneumonia	487.0
Aspiration pneumonia	770.14
Ornithosis with pneumonia	073.0
Friedlander's bacillus infection in conditions specified elsewhere and of Unspecified site (also as caused by kebsiella pneumonia)	041.3

These ICD-9 codes, present in the primary diagnosis field, will be used to identify Pneumonia episodes during the measurement period.

**Table PNEU-B: Codes Used to Identify Services/Costs to be Included During Episode:**

**Table PNEU-B1: Diagnostic codes to identify clinically relevant services during a Pneumonia episode. (These codes can be primary or secondary diagnoses.)**

<b>Description</b>	<b>ICD-9 Codes</b>
Pneumonia diagnoses	see PNEU-A diagnoses
Chest pain	786.50
Fever	780.6
<i>Respiratory-related</i>	
Asthma, unspec.	493.90
Status Asthmaticus	493.91
Asthma unspec. w/ acute exacerbation	493.92
Bronchitis, acute	466.0
Cough	786.2
Influenza, NOS	487.1
Pneumonia, unspecified	486
Upper respiratory infection, unspec. site	465.9
Shortness of breath	786.05
Respiratory disease, unspec.	519.9
Wheezing (excludes asthma)	786.07
Pleurisy	511.xx
Costochondritis	733.6
Clostridium-difficile	008.45

**Table PNEU-B2: CPT Codes to identify services to be included in Ambulatory Pneumonia Episode resource costs regardless of whether there is a pneumonia-associated diagnosis.**

Description	CPT Codes
X-rays chest	71010-71035
CT Chest	71250, 71260, 71270
EKGs	93000, 93005, 93010, 93040, 93041, 93042
Bronchoscopy	31624, 31628
Inhalation Treatment	94640
Decortization, pulmonary	32220
Anesthesia-related procedures	00541, 00520
Blood Count (CBC)	85025
Bronchodilation, spirometry	94010, 94060
Non-invasive ear or pulse oximetry	94760
Carbon-Monoxide diffusing capacity	94720
Home Health/DME	initial only with look-back to confirm newness, i.e., if repeat service do not include

**Table PNEU-B3: Diagnostic Codes to identify CAP-Related Hospital Admissions for inclusion in Ambulatory Pneumonia Episode Resource Costs**

Description	ICD-9 Code
Pneumonia diagnoses	see PNEU-A diagnoses
<b>Pneumonia codes (see above) used as secondary diagnosis with primary diagnosis of :</b>	
Bacteremia	790.7
Empyema	510.xx
Unspecified pleural effusion	511.9
Septicemia	038.xx
Respiratory failure	518.81, 518.84

**Table PNEU-B4: Evaluation and Management Codes**

Description	CPT Codes
General physician office visits	99201-99205, 99211-99215
Preventive medicine/screening	99394-99397, 99401-99404, 99411, 99412, 99420, 99429, 99384-99387
Observation care	99217-99220

Emergency dept care	99281-99285
Home health	99341-99345, 99347-99350
Skilled nursing facility	99304-99310, 99315, 99316, 99318, 99324-99328, 99334-99337
Office consultation	99241-99245
Unlisted	99455, 99456

These codes will be used to help identify those services that should be categorized as “E&M” during our analyses.

**Table PNEU-B5: Pharmacy: Medications to Include in Pneumonia Episode Costs**

Description
Respiratory agents
Bronchodilators
Antibiotics
Anti-influenza meds (not antiretrovirals)
Steroids – all
O2
Antihistamines
Cough medicines
Nebulizers
Anti-fungals

**Table PNEU-C: Episode Exclusions**

**Table PNEU-C1: Exclusion Due to Possibility of Hospital-Acquired Pneumonia or nursing home-acquired Pneumonia**

Description
Hospitalization with 90 days with Pneumonia admission (see Table PNEU-B3)
Hospitalization within 90 days prior to trigger hospitalization, any reason, if LOS greater than 2 days.
May have resided in NH prior to trigger event (determined by medical visit in nursing home prior to trigger event or presence of NH claim).

**Table PNEU-C2: Codes to Identify Active Cancer Treatment**

Description	ICD-9-CM Diagnosis
Cancer	140-208, 230-239

*WITH*

Description	CPT	ICD-9-CM Procedure	UB Revenue
Treatment	38230, 38240-38242, 77261-77799, 79000-79999, 96400-96549	41.0, 41.91, 92.2	028x, 033x, 0342, 0344, 0973

**Table PNEU-C3: Codes to Identify ESRD – Excluded from analysis**

Description	CPT	HCPCS	ICD-9-CM Diagnosis	ICD-9-CM Procedure	UB Revenue	UB Type of Bill	POS
ESRD (including renal dialysis)	36145, 36800-36821, 36831-36833, 90919-90921, 90923-90925, 90935, 90937, 90939, 90940, 90945, 90947, 90989, 90993, 90997, 90999, 99512	G0257, G0311-G0319, G0321-G0323, G0325-G0327, G0392, G0393, S9339	585.5, 585.6, V42.0, V45.1, V56	38.95, 39.27, 39.42, 39.43, 39.53, 39.93, 39.94, 39.95, 54.98	080x, 082x-085x, 088x	72x	65

**Table PNEU-C4: Codes to Identify Organ Transplant – Excluded from analysis**

Description	CPT	HCPCS	ICD-9-CM Procedure	UB Revenue
Organ transplant	32850-32856, 33930-33945, 44132-44137, 44715-44721, 47133-47147, 48160, 48550-48556, 50300-50380	S2152, S2053-S2055, S2060, S2061, S2065	33.5, 33.6, 37.5, 41.94, 46.97, 50.5, 52.8, 55.6	0362, 0367, 0810-0813, 0819

**Table PNEU-C5: Codes to Identify HIV-AIDS**

Description	ICD-9-CM Diagnosis
HIV	042

**Table PNEU-C6: Codes to Identify Cystic Fibrosis and Lung Cancer**

Description	ICD-9-CM Diagnosis
CF	277.0x
Lung Cancer	162.x

### Risk Adjustment Method

Comorbid conditions indentified as HCCs in months preceding event date using inpatient and outpatient ICD-9 codes.

### Episode Severity / Disease Staging

None

### Outlier Methodology

All individuals are included in the analysis with costs winsorized at the 2<sup>nd</sup> and 98<sup>th</sup> percentile.

### **Level of Measurement/Analysis**

Measurement will take place at the level of the individual provider. Attribution of resource use and costs for a patient will be assigned to the provider for the trigger E&M ambulatory care visit.

*Note: Portions of these measure specifications are based on existing HEDIS and Prometheus measure specifications.*