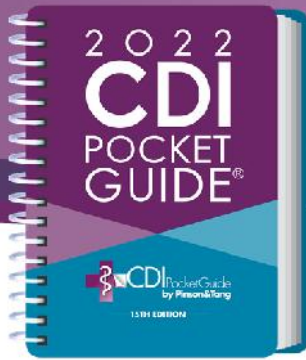


March 24, 2022



CDI Pocket Guide® Pneumonia

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1

Pinson&Tang About Us



Richard Pinson
MD, FACP, CCS, CDIP

Dr. Richard Pinson is a physician, educator, administrator, and healthcare consultant. He practiced Internal Medicine and Emergency Medicine in Tennessee for over 20 years having board certification in both.



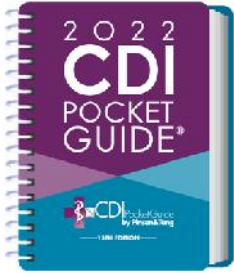
Cynthia Tang
RHIA, CCS, CRC

Cynthia brings over 30 years of experience in coding and clinical documentation, health information management, and clinical resource management. For over 25 years she has traveled across the country implementing successful and sustainable coding and CDI programs in hundreds of hospitals.



2

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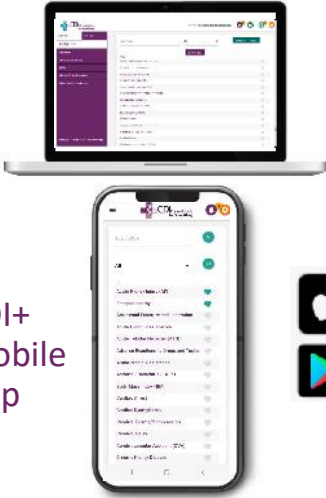


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3

Pneumonia

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Agenda

2022 CDI Pocket Guide
Pages 186-191

ICD-10 and DRG Classification
Coding & Documentation Challenges

Definition and Clinical Indicators
Diagnostic Testing & Treatment
CAP and HCAP Redefined
Pneumonia Types

Case Studies
Q&A

4

DRG Classification of Pneumonia

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Pneumonia is an MCC (with some exceptions)

As Principal Diagnosis:

DRGs 193-195

Simple Pneumonia & Pleurisy "Simple" Pneumonia

Streptococcus pneumoniae
[pneumococcus], Influenza, Viral,
Atypical (Mycoplasma, Chlamydia)

Relative weights

0.6658

0.8639

1.3120

DRGs 177-179

Respiratory Infections & Inflammation "Complex" Pneumonia

Klebsiella, Pseudomonas, Staph,
Gram-negative, TB, COVID-19 (U07.1),
Lung Abscess, Aspiration

Relative weights

0.8727

1.2078

1.8491

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What are the Challenges?

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- Target of payer auditors since it is an MCC
- Sputum and blood cultures are often negative which makes it difficult to confirm the organism causing the pneumonia
- Documentation of the probable organism by the provider
- Pneumonia as principal diagnosis is included in the Readmission and Mortality quality measures within the CMS Pay for Performance Programs

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Definitions

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Pneumonia: Lung infection

Caused by virus, bacteria, fungus, parasites, others

Aspiration often leads to anaerobic bacterial infection

Examples: Influenza, COVID-19, Pneumococcus, Pseudomonas, MRSA, fungal (Candida, Pneumocystis, Cryptococcus, Aspergillus).

Pneumonitis: Lung inflammation

Caused by chemicals, fumes, toxins, allergic reactions, vasculitis, drugs, radiation, aspiration

Sometimes called interstitial lung disease, pulmonary fibrosis, or pneumoconiosis

- Can be acute and/or chronic
- May progress to secondary infection

Examples: Chlorine gas, silicosis, SLE, methotrexate, aspiration of gastric contents

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Pneumonia

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Clinical Indicators

The diagnosis of pneumonia is first and foremost a clinical diagnosis, based on symptoms and physical examination.

1. **Symptoms:** Cough, fever, sputum, dyspnea, pleuritis, chest pain
2. **Physical exam:** Tachypnea and/or rales, rhonchi, dullness to percussion, decreased breath sounds, pleural rub, chest wall splinting
3. **WBC:** Variable
4. **Chest X-ray or CT:** Positive
5. **Treatment with antibiotics:** Full course 5-10 days, IV and/or PO

Clinical Validation

- Do not need all five for a diagnosis of pneumonia
- May only have a positive chest x-ray and positive physical exam
- CT scan is definitive
- WBC may not be elevated – may have previously been on antibiotics or other reasons
- Must be treated with full course of antibiotic therapy: 5 to 10 days, IV and/or PO

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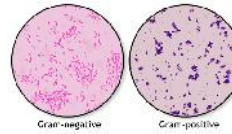
Pneumonia

Diagnostic: Lab Testing

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Gram stain, sputum culture and blood culture is usually **low-yield**:

- **Gram stain:** Sputum specimen stained on a glass slide with crystal violet, iodine, and safranin → Gram negative = pink; Gram positive = violet.
 - Gram-positive diplococci = Pneumococcus
- **Sputum culture & sensitivity:** Sputum specimen applied to culture medium in Petrie dish. Any growth is tested for antibiotic effectiveness (sensitive vs resistant) using small antibiotic-impregnated disks → a ring of no-growth = sensitive.
 - Pseudomonas sensitive to cefepime
- **Blood culture:** Two bottles of blood drawn sterilely at same time and inoculated into bottles containing culture media. Observed for bacterial growth 24, 48, 72 hrs; any growth subjected to sensitivity testing.



Patient must cough deeply from the lung

Tracheal aspirate: Suction aspiration from endotracheal tube, via bronchoscope, or suction catheter inserted thru cricothyroid membrane or by needle aspirate. Submitted for Gram stain, culture and sensitivity—more accurate than expectorated sputum.

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Pneumonia

Diagnostic: Lab Testing

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Urine tests: Usually **high yield**

- Urine pneumococcal antigen test: Sensitive (>70%) and specific (98%)
- Urine Legionella antigen test: Sensitive (>70%) and specific (>99%)



Nasal/pharyngeal swab: **High yield**

- COVID-19 rapid antigen and PCR testing
- Influenza rapid antigen and PCR testing



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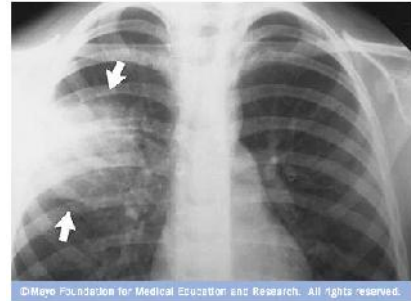
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Diagnostic: Radiology

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Chest X-ray

- Findings on chest x-ray: Consolidation or infiltrate (white areas) in one or more lobes of the lung, "ground-glass" appearance, "air bronchogram", localized pleural effusion, cavitation
 - May be confused with pulmonary edema, atelectasis, chronic lung disease, pulmonary embolism
- Treating physician should review personally in addition to radiologist interpretation.
- False negative chest x-ray
 - Explain diagnosis on clinical grounds
 - CT of chest is an option
- Repeat chest x-ray
 - 2-3 days if initial x-ray negative or not improving
 - 2-4 weeks if prompt and continuing improvement



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Pneumonia

Diagnostic: Radiology

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CT Scan

- More sensitive for the detection of pneumonia than chest x-ray
- More detail and identifies complications (lung abscess, pleural effusion, atelectasis, etc.)

Indicators:

- Pneumonia not improving
- Immunosuppression
- Negative chest x-ray (treat empirically or CT Scan)



CT Image of COVID
Pneumonia

12

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CAP and HCAP/HAP/VAP – Previously

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Community Acquired Pneumonia (CAP)

Pneumonia acquired in the community without high-risk healthcare exposure

Typical Organisms: Streptococcus pneumoniae [Pneumococcus], Hemophilus influenzae [H. flu], Atypical: Legionella, Mycoplasma, Chlamydia, Moraxella catarrhalis

Antibiotics: Rocephin, Zithromax, Levaquin, Avelox, Doxycycline

Healthcare Associated Pneumonia (HCAP)

High-risk healthcare exposure:

- Hospitalized ≥ 2 days w/i last 90 days
- Residence in SNF, LTAC, IRF
- Attendance at dialysis, oncology, or wound care clinics, infusion center
- Treatment at an ASC
- Home health care with IV meds or wound care

Typical Organisms: Gram negative rods, MRSA, and MSSA

Antibiotics: Vancomycin, Cefepime, Zosyn, etc.

The Infectious Diseases Society of America and American Thoracic Society (IDSA/ATS) in 2019 determined that patients classified as HCAP did not have better outcomes with the increased use of broad-spectrum antibiotics, especially Vancomycin and Cefepime.

Abandoned the use of “HCAP” to categorize pneumonia.

CAP and HCAP: Redefined 2019

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Community Acquired Pneumonia (CAP)

Pneumonia acquired in the community without high-risk for drug resistance

Treatment: Zithromax, Rocephin, Levaquin, Doxycycline

If severe CAP, multiple broad-spectrum antibiotics

Hospital Acquired Pneumonia (HAP/VAP)

Pneumonia acquired in the hospital, including VAP

MRSA, Pseudomonas, and other similar drug resistant gram-negative bacteria.

Treatment: Vancomycin, cefepime, cefazolin, ceftazidime, Cipro, others

IDSA/ITS 2019:

All pneumonias are now considered “community acquired” except if hospital acquired.

Implies **Gram-negative** or **Staphylococcus** as cause

Pneumonia Treatment

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- Depends on the organism if identified.
- Typically depends on clinical circumstances to define the most likely organism(s).
- Clinician’s antibiotic choice informs the likely organism when not confirmed.
- Look for full course of antibiotic treatment: 5-10 days. Continued after discharge helps to confirm diagnosis of pneumonia.



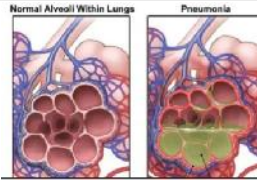
Antibiotic Table for Pneumonia

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Antibiotic	Gram Positive Cocci				Gram Negative Bacilli					Anaerobes (Aspiration)	Atypicals	
	Streptococci pneumoniae (pneumococcus)	Staphylococci			Klebsiella pneumoniae	Escherichia coli	Haemophilus influenzae	Pseudomonas	Proteus mirabilis Acinetobacter Citrobacter Enterobacter	Pepto-streptococcus Fusobacterium Bacteroides	Mycoplasma Chlamydia	Legionella
		Staph aureus (MSSA)	Community acquired (MRSA)	Hospital acquired (MSSA)								
Aztreonam, cefaroline, cefepime, cefotaxime, ceftazidime, cefepime, meropenem, piperacillin, piperacillin					✓	✓		✓				
Giperflaxacin					✓	✓	✓		✓			
Clindamycin	✓	✓	✓							✓		
Doxycycline	✓	✓	✓					✓			✓	✓
Flagyl (metronidazole)										✓		
Gentamycin, tobramycin, amikacin					✓	✓	✓	✓	✓			
Levofloxacin (levofloxacin), moxifloxacin, gemifloxacin	✓				✓	✓	✓		✓	✓	✓	✓
Oxacillin, dicloxacillin, fusidic acid		✓										
Rocephin (ceftriaxone)	✓	✓			✓	✓	✓					
Vancomycin			✓	✓								
Zithromax (azithromycin), clarithromycin	✓	✓					✓				✓	✓
Zosyn (piperacillin-tazobactam)	✓	✓			✓	✓	✓	✓		✓		
Zyvox (linezolid)			✓	✓								

This table demonstrates antibiotic options commonly used for the various organisms that can cause pneumonia. The information in this table is intended to help nonphysicians identify the antibiotics commonly used for treating different types of pneumonia. It is not intended in any way to establish or recommend any standard of care or medical practices.

Aspiration Pneumonia



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Clinical Indicators

- Recent vomiting; presence of NG tube
- Impaired gag reflex, dysphagia, GERD
- Esophageal disorder: obstruction, motility, stenosis, cancer
- NH resident; debilitated, bed-confined
- Alcoholism, severe intoxication, illicit drug use, overdose, altered level of consciousness
- History of CVA or neurodegenerative disorder

Patients who aspirate gastric contents are considered to have aspiration pneumonitis. Many of these patients have resolution of symptoms within 24 to 48 hours and require only supportive treatment, without antibiotics—but almost all inpatients treated with antibiotics.

Diagnostic Tests

- Chest x-ray: RLL infiltrate is “classic” location (due to gravity and airway anatomy)
- Positive swallowing study is highly suggestive. A negative study does not rule out aspiration.

Organisms:

- **Anaerobic bacteria:** Peptostreptococcus, Fusobacterium, Bacteroides

Treatment

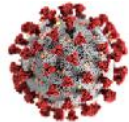
- Commonly used antibiotics: Zosyn, Clindamycin, Levaquin, Flagyl

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COVID-19 Pneumonia



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Clinical Indicators

- Positive COVID-19 test
- Fever, cough, difficulty breathing
- Hypoxemia, acute respiratory failure

Organisms

- Viral but may have secondary bacterial infection

Diagnostic Tests

Chest x-ray: Consolidation and ground-glass opacities, with bilateral, peripheral, and lower lung distributions; lung involvement increases with a peak in severity at 10 to 12 days after symptom onset.

Treatment

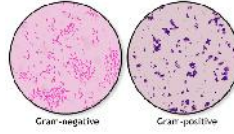
- Remdesivir (antiviral for COVID)
- Dexamethasone (steroid)
- Baricitinib (immune inhibitor)
- Tocilizumab (monoclonal antibody)

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Gram-negative Pneumonia



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Clinical Indicators

- Elderly, debilitated, chronic illness
- Cancer, chemotherapy, COPD
- SNF, hospitalized or recent hospitalization
- Recent antibiotic therapy

Diagnostic Tests

- Sputum Gram stain, culture and sensitivity testing (including tracheal aspirate)
- Blood cultures

Organisms

- Common organisms: E. coli, Klebsiella, Proteus, Serratia, Pseudomonas, Enterobacter, and others.

Treatment

- Zosyn, Cefepime, Ceftazidime, Gentamicin, others

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Staphylococcus Pneumonia



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Clinical Indicators

- IV catheters/devices, G-tube, IV drug use
- ESRD, open wounds/skin ulcers
- Recent antibiotic therapy, immune-suppressed
- Postoperative status, ventilator status
- Empyema

Diagnostic Tests

- Sputum gram stain, culture and sensitivity testing (including tracheal aspirate)
- Blood cultures
- Cultures of wounds, catheters, etc.

Organisms

- MSSA (Methicillin sensitive)
- MRSA (Methicillin resistant)

Treatment

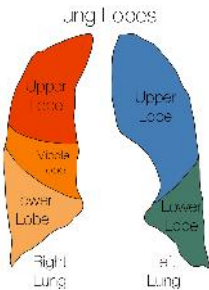
- Oxacillin
- Vancomycin
- Zyvox (linezolid)

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Lobar Pneumonia



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Definition: Complete consolidation of a lobe of the lung.

Distinguish lobar from left and right upper, middle, lower lobe pneumonia with incomplete consolidation or simply “infiltrates.” For example, “RML pneumonia” is not lobar pneumonia.

Lobar Pneumonia (J18.1) is only coded when “lobar pneumonia” is documented by the provider and causal organism is not identified.

Organisms

- Most common = pneumococcus

Diagnostic Tests

- Sputum gram stain, culture and sensitivity testing (including tracheal aspirate)
- Blood cultures
- Pneumococcal urine antigen test

Treatment

- Levaquin (levofloxacin), Avelox (moxifloxacin)
- Rocephin (ceftriaxone)
- Zithromax (azithromycin), clarithromycin
- Ciprofloxacin
- Doxycycline

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Question: Aspiration Pneumonia

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I have received conflicting directions on how to code aspiration pneumonia. Aspiration pneumonitis is assigned to code J69.0. I was recently audited and was told that I can't presume aspiration pneumonitis if the patient has a history of aspirating. I was also told that I cannot use code J69.0 when you don't know what was aspirated.

In other words, if the patient has a condition in which he aspirates all the time, but it is never documented what was aspirated such as food or secretions or chemicals, etc., the J69.0 should not be assigned and a code for dysphagia, such as R13.19, should be assigned.

Also, a physician diagnosed a sepsis patient with “CAP aspiration pneumonia.” In 3M, two codes were assigned: J18.9 + J69.0, should we be using two codes when you have no idea what was actually aspirated?

According to ICD-10 Index and Tabular, aspiration PNA due to inhalation of food and vomit (J69.0) is the default code for unspecified aspiration PNA or bronchitis, so specification of what was aspirated is not required.

J18.9 is for unspecified pneumonia and J69.0 is more specific regarding type of pneumonia, so J18.9 is not necessary. “CAP aspiration PNA” simply indicates that it occurred in the community setting, so does not require assignment of code J18.9. CAP is connected to aspiration PNA in this case. To use both codes, one would need “CAP and aspiration PNA”.

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Case #1: Aspiration Pneumonia denial

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70-year-old female presented from home to ED with AMS. Admitted to the ICU with sepsis due to aspiration pneumonia, pyelonephritis, acute respiratory failure, and encephalopathy (requiring restraints) due to opioid use.

Chest X-ray: No pneumonia; chronic CHF.
Chest CT (per radiology): Old rib fractures, small right pleural effusion w/adjacent opacity -- likely a combination of atelectasis and contusion.

Provider read the imaging as aspiration pneumonia and stated in his notes that the CT showed a probable right lower lobe aspiration pneumonitis.

RR: 20 – 28, O2 at 4L NC.

Breath sounds on admission: No wheezes, rhonchi or rales.

Breath sounds 48 hours later: Bilateral wheezing with scattered rhonchi.

Treatment: IV Vanco, IV Cefepime; 3.5 L IVF bolus in ED.
Discharged on po clindamycin x 4 days.

Aspiration pneumonia documented throughout the record.

Case #1: Aspiration Pneumonia denial, continued

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Denial Rationale: The medical record must meet the following guidelines for Aspiration Pneumonia:

- Must have/have had a condition that predisposes him/her to aspiration pneumonia: **Reduced consciousness resulting in a compromise of the cough reflex and glottis closure**, or Dysphagia from **neurologic deficits**, or Disorders of the upper GI tract including esophageal disease, surgery involving the upper airways or esophagus, and uncontrolled gastric reflux, or Mechanical disruption of the glottis closure or lower esophageal sphincter due to tracheostomy, ET intubation, bronchoscopy, upper endoscopy, and nasogastric tube feeding, or Other: Pharyngeal anesthesia or miscellaneous conditions such as protracted vomiting, large volume tube feedings, feeding gastrostomy, and the recumbent position.
- **AND** Clinical course that varies from common manifestations of a bacterial pneumonia including cough, fever, purulent sputum, and dyspnea that begins within hours and can resolve promptly or progresses to ARDS or pulmonary edema, to a more indolent course with evolution over days to weeks and development of lung abscess, necrotizing pneumonia, empyema and/or pulmonary fibrosis (usually by anaerobic organisms and/or chronic aspiration)
- **AND** Chest radiography that shows infiltrates and possibly cavitation, empyema, or necrosis in dependent pulmonary segments (lower lobes for upright aspiration and superior segments of lower lobes or posterior segments of upper lobes for recumbent aspiration).

Case #2: COVID or CAP?

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67-year-old female with PMHx DM type 2, hypertension, major depressive disorder, s/p MVA, obesity, admitted from rehab facility with altered mental status on 1/26. Previously diagnosed with COVID on Jan. 15.

H&P Assessment/Plan: Pneumonia, Suspected CAP

- Symptoms: AMS
- Physical Examination: Mild Crackles/wheezing
- Vitals: BP 107/58, P 65, Temp 98.8, RR 18, SpO2 99 %.
- Lab: CMP was largely unremarkable, CBC: leukopenia at 3.8 K; anemia at 9.1; COVID positive.
- Imaging: Chest x-ray was done on my read, developing underlying right lower lobe infiltrate. Patient also recently had COVID-19; residual changes may be expected.

Management: IV Abx w/ Rocephin and Azithromycin; mucolytics; Duonebs to continue, supp. Oxygen for now.

DS: Pt admitted with acute onset Encephalopathy, with COVID diagnosed on 1/15, Ammonia, Blood gas, Blood cx, UA all unremarkable. CXR on admission showed signs of some infiltrates (R>L), pt reported mild non-productive cough.

Pt was started on Rocephin and Azithromycin on admission for possible CAP. Treated with Azithromycin, will provide Cefdinir x 4 days more on DC to treat for total 7 days.

Her symptoms of PNA improved but encephalopathy did not improve early on with Abx/IVF, so MRI Brain was obtained and it was neg for any acute abnormalities. She improved and back to baseline.

PRINCIPAL PROBLEM:	POA
Encephalopathy, metabolic [G93.41]	Yes
COVID-19 [U07.1]	Unknown
PNA (pneumonia) [J18.9]	Yes

Case #3: Pneumonia denial

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60-year-old female with PMHx HTN, hypothyroidism and recent COVID-19 PNA in January 2021, s/p lap band presents as transfer from OSH with positive COVID-19 PCR and nausea/vomiting and diffuse body aches, and CT abd concerning for postoperative fluid collection vs. abscess. Further noted left lower lobe airspace opacity which was considered worrisome for PNA or aspiration pneumonitis.

At OSH, labs WBC 16.62, H/H 11.2/33.6, procal 0.73, Cr 1.15 and bland UA with all other labs being WNL. On physical exam, she has significant epigastric tenderness to palpation. She will be admitted to the COVID isolation unit due to new pneumonia....will start IV antibiotics with Zosyn and Flagyl.

Progress Notes:

- Leukocytosis, non-severe COVID-19 infection with concern for superimposed CAP including viral 1st bacteria.
- Will complete a course of Augmentin and doxy to cover for any sort of possible new pneumonia that could be on her chest CT although I think these infiltrates we are seeing are residual infiltrates from her prior coronavirus disease.

DS: Pt presented as a transfer from OSH after positive COVID 19 PCR and CT abd concerning for post-op fluid collect vs abscess. Pt was treated for COVID 19 at this facility 3 months prior to the current presentation and suspect current positive test is far more likely result of continued viral shedding rather than repeat infection.

CT reviewed by general surgery team and concluded the area of concern was inconsistent with abscess and far more likely represents a fluid collection. However, CT chest showed consolidation in the lower lung fields concerning for PNA. Initially pt was put on Vanc and Zosyn and transitioned to Augmentin and Doxy for 7 days of OP treatment, though concern for infection, either intra-abdominal or pulmonary, was significantly reduced from presentation.

Case #3: Pneumonia denial, continued

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Denial Rationale

It was noted that the physician documented pneumonia in the progress note. While the patient's presentation warranted consideration of pneumonia as a possible diagnosis, upon further investigation, the diagnosis of pneumonia was not substantiated clinically. To clinically validate pneumonia, one would expect to see all of the following:

Documentation of the diagnosis of pneumonia maintained throughout the record,

Confirmation of the diagnosis by imaging studies (x-ray, CT),

Characteristic clinical symptoms, and

Appropriate antibiotic treatment.

We acknowledge the patient had an abnormal imaging; however **there was no documentation of clinical symptoms**. The **respiratory examination was documented as clear**. There was insufficient clinical evidence and supportive documentation in the record available for review to substantiate coding of this condition.

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Case #4: Aspiration Pneumonia ?

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H&P 2/18: Patient admitted for abd pain and mesenteric ischemia. Taken to OR where mesenteric angiogram was performed. SMA was found to have a complete occlusion and suction thrombectomy was performed. At the end of the case, SMA was widely patent. The patient was subsequently brought to the OR with ACS for exploratory laparotomy which demonstrated dusky bowel, but no overt necrosis. Abthera placed and plans made for second look at a later time.

Respiratory: Of note had large aspiration event during induction. High risk for respiratory decompensation in the setting of aspiration PNA.

Hospital Problem list: Aspiration pneumonia.

2/18 Chest Xray: Findings/Impression: No focal consolidation, pleural effusion, or pneumothorax. The heart size and mediastinal contour are within normal limits. Aortic calcifications are noted. The bones appear grossly intact. Cholecystectomy clips are present in the right upper quadrant.

2/19 PN: Respiratory: Of note had large aspiration event during induction. High risk for respiratory decompensation in the setting of aspiration PNA.

2/19 PN: Concern for aspiration in OR but CXR yesterday clear and P/F ratio near 300.

2/19 Chest Xray: Impression: Devices: No change. ETT 4 cm above the carina. OGT remains with side-port 2 cm below the EG junction. Continued left IJ central line. Tip in the SVC.

Patient expired 2/19.

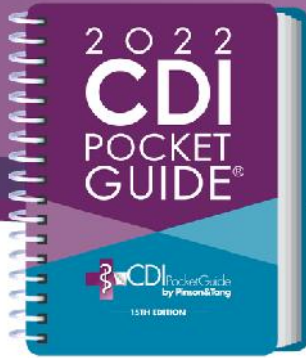
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Contact us: contact@pinsonandtang.com



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