Definition of Acute Chest Syndrome

Acute illness characterized by **fever** and/or **respiratory signs and symptoms** (i.e. chest/back pain, cough, hypoxia) accompanied by a **new pulmonary infiltrate** involving at least one complete lung segment consistent with the presence of alveolar consolidation on a chest X-ray.

Labs

Initial Labs on Admission
(If not obtained during pre-admit eval in ED/Clinic)
- Type and screen
- CBC with diff and reticulocyte count
- BMP

Daily Labs
- CBC with diff and reticulocyte count

Consider
- Blood culture (If Temp ≥ 38.3°C *and* no prior blood culture obtained)
- Respiratory viral panel (If respiratory symptoms present during seasonal viral outbreaks)

Antibiotic Management of ACS

Total Treatment (IV+PO): 7 days

Concern for Sepsis
Cefepime 50 mg/kg IV q8h
(Max dose 2000mg per dose)
+
Vancomycin 20 mg/kg IV q8h
(Max dose 1000mg per dose)

Surgical Splenectomy or Central Venous Line
Levofloxacin
10 mg/kg IV x24-48 hr
q12h for <5yo
q24h for ≥5yo
(Max dose 750mg per dose)

Standard
Ampicillin
50 mg/kg IV q6h x24-48 hr
(Max dose 2000mg per dose)
+
*Azithromycin**
10 mg/kg PO daily x 3 days
(Max dose 500mg per dose)
*If < 7 days of Levofloxacin

Penicillin Allergy
Clindamycin
10 mg/kg IV q8h x24-48 hr
(Max dose 600mg per dose)
+
Azithromycin
10 mg/kg PO daily x 3 days
(Max dose 500mg per dose)

Stable or improving after 48-72hrs? [1]

No

Levofloxacin
10 mg/kg IV
q12h for <5yo
q24h for ≥5yo
(Max dose 750mg per dose)

Obtain blood culture

Consider [2] Adding
Vancomycin
20 mg/kg IV q8h x48 hr
(Max dose 1000mg per dose)

Stop if blood culture negative x48hr

Yes

Surgical Splenectomy or Central Venous Line
Amoxicillin
90 mg/kg/day PO div TID
(Max dose 1000mg per dose)
+
*Azithromycin**
10 mg/kg PO daily x 3 days
(Max dose 500mg per dose)
*If < 7 days of Levofloxacin

Standard
Amoxicillin
90 mg/kg/day PO div TID
(Max dose 1000mg per dose)
+
Continue *Azithromycin**
10 mg/kg PO daily x 3 days
(Max dose 500mg per dose)
*If < 7 days of Levofloxacin

Penicillin Allergy
Clindamycin
10 mg/kg/dose PO q8h
(Max dose 600mg per dose)
+
Continue *Azithromycin*
10 mg/kg PO daily x 3 days
(Max dose 500mg per dose)

Signs of improvement and able to tolerate PO?

Yes — OR

Amoxicillin
90 mg/kg/day PO div TID
(Max dose 1000mg per dose)
+
*Azithromycin**
10 mg/kg PO daily x 3 days
(Max dose 500mg per dose)
*If < 7 days of Levofloxacin

Consider
Levofloxacin
10 mg/kg PO
q12h for <5yo
q24h for ≥5yo
(Max dose 750mg per dose)

Stop antibiotics after 7 days of combined IV and PO therapy

[1] Non-Improvement Criteria

- Increased respiratory support
- Worsening imaging findings
- Plans for exchange transfusion
- Hemodynamic instability or concern for Sepsis

[2] Use of Vancomycin

Consider adding Vancomycin after repeat blood culture if any of the following:
- Moderate to severe parapneumonic effusion
- Empyema
- Other concern for MRSA

Alternative/Additional Agents

Medication	Dosage	Notes
Prophylactic Penicillin	<3yrs: 125mg PO BID >3yrs: 250mg PO BID	Prophylactic Penicillin should be discontinued while patient is receiving antibiotics for ACS.
Oseltamivir (Tamiflu)	0-12 yrs: ≤ 15 kg: 30 mg BID x5 days 16-23 kg: 45mg BID x5 days 24-40 kg: 60mg BID x5 days > 40 kg: 75mg BID x5 day ≥ 13 yrs: 75mg BID x5 days (Max dose 75mg)	• Recommended for patients with flu-like symptoms during seasonal influenza outbreaks. • Start within 2 days of symptoms.

Respiratory

- Consult Respiratory Therapist for airway clearance/management
- Use oxygen to keep sats ≥ 93%
- Positive Expiratory Pressure (PEP) q4h
- Incentive Spirometry: 10 breaths q2h when awake. Consider soap bubbles or pinwheels for younger patients
- Consider Nasal Intermittent Positive Pressure Ventilation (NIPPV)
- Albuterol if cough, wheeze, or history of Reactive Airway Disease

General Care

- Maintain "euvolemia." Hypotonic IV Fluids (D5 ¼NS) @ 1x maintenance. More fluid is appropriate only if patient is dehydrated or if insensible losses are increased (e.g. fever).

Red Cell Transfusion

- Red Blood Cell transfusion plays an important role in treatment of ACS which should be determined on an individual case basis
- Severe respiratory status warrants exchange transfusion
- Benefits of transfusion should be weighed against alloimmunization risks