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Target Population

Intended for patients with:

Principle Diagnosis: Bronchiolitis (acute respiratory illness associated with: nasal congestion, cough & diffuse wheezing, crackles, tachypnea, &/or retractions)
ICD9 Codes: 466.1, 466.11, 466.19, 480.1

Age: 1 month – 15 months Time: Dec - Apr

First time episode

Exclude patients with:

History of: CF, BPD, chronic cough, asthma, previous wheezing

chronic respiratory condition requiring home O₂

Immunodeficiencies

Serious bacterial infections, toxic appearance

PICU/NICU admissions or vent use

Key Recommendations

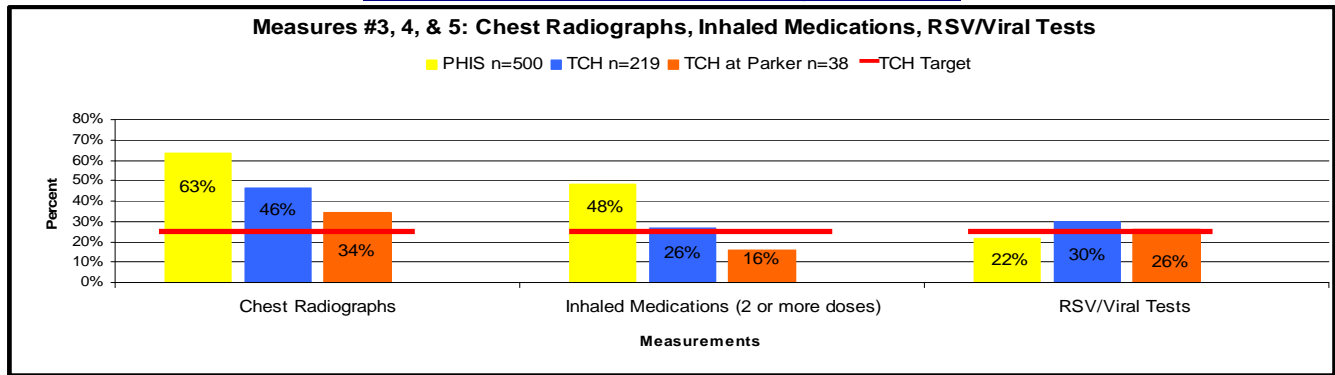
Indicated:

1. Care Path Use beginning in the ED ^A
2. O₂, Suctioning & Fluids ^D
3. Careful Clinical Monitoring ^D
4. Passive Smoke avoidance ^C

Not routinely Indicated:

1. Antibiotics ^B
2. Chest X-ray, Viral Testing ^A
3. Inhaled Medications (unless proven benefit)^A
4. Steroids, Chest Physiotherapy (CPT) ^A

2007 Inpatient Monitoring Results



Clinical Management

1. Prevention

- Droplet precautions for all care settings
- Good hand washing!
- Protect high risk patients from exposure
- Eliminate exposure to smoke
- Preventive medical therapies (RSV-IVIG or palivizumab) may be considered for high-risk patients

2. Telephone Triage

- **Activate EMS (911):** Severe difficulty breathing (struggling for breath, grunting noises with each breath, unable to speak or cry because of difficulty breathing). Blue lips. Child passed out.
- **ED, same day:** Underlying heart or pulmonary disease, breathing heard across room, poor fluid intake, fever above 105. Age less than 3 months, less than 1 year (RR above 60, unable to suck or sleep), greater than 1 year (RR above 40, difficulty breathing). Not interactive.
- **Phone contact with PCP:** Chronic or underlying illness, parental request
- **Office visit, next day:** Worsening Cough, rhinorrhea, and/or low fever

3. Clinical Assessment

- Evaluate hydration status
- Evaluate the patient using the Bronchiolitis Severity Classification after nasal suctioning

Bronchiolitis Severity Classification

<u>Mild Disease</u>	<ul style="list-style-type: none"> • Alert, active, feeding well • None to minimal retractions • RR normal to mildly elevated (less than 50)
<u>Moderate Disease</u>	<ul style="list-style-type: none"> • Alert, consoles, feeding decreased • Minimal to moderate retractions • RR is mildly to moderately elevated (50-70)
<u>Severe Disease</u>	<ul style="list-style-type: none"> • Fussy, difficult to console, poor feeding • Moderate to severe retractions, • RR is moderately to severely elevated (greater than 70)

4. Monitoring (Use Flow Sheet: Fig 1)

Clinical Severity Reassessment Schedule:

- Mild = every 4 hour assessments, consider discharge
- Moderate = every 4 hour assessments
- Severe = every 2 hour assessments

Electronic monitoring:

- Continuous cardiac/pulse oximetry monitoring is only recommended for unstable patients (Severe Disease Classification) and/or for patients under 3 months of age.
- Pulse oximetry on room air for 5 minutes BID and/or if change in clinical condition (see [Assessment of Oxygenation](#) below).
- After Time to Desaturation (Tdesat) is recorded, place patient back on oxygen if needed to achieve SaO₂ at or above 90% and remove pulse ox.

Assessment of Oxygenation*

1. Measure room air O₂ saturation for 5 minutes BID
2. Record time to desaturation (Tdesat) at 5 minutes. Allow SaO₂ to fall as low as 85%. Record this SaO₂ reading
3. Reinstigate O₂ to achieve SaO₂ at or above 90% or discontinue per discharge criteria

5. Diagnostic Tests / Studies

The following diagnostic tests are indicated only if they will change outcome

- RSV/Viral Test (See [Figure 1](#))
- CBC, Blood or Urine Cultures
- Blood Gas
- Chest X-ray

6. Therapeutics – “Prove it or don’t use it”

Evaluating Clinical Status & Response to Treatment

1. On initial assessment, determine Severity Classification
2. Decide on intervention (based on Care Algorithm (Figure. 2))
3. Repeat severity classification to determine if intervention was helpful

Routinely Indicated: Supportive Care

- Oxygen to achieve SaO₂ at or above 90%
- P.O. / I.V. fluids as needed
- Suction upper airway (use saline PRN):
 - Prior to feeding
 - During clinical assessment
 - PRN evidence of upper airway obstruction

Consider if severity classification is moderate or severe [see [Figure 2](#)]:

- **First Choice: Racemic Epinephrine:** 0.25 ml (for patients less than 5kg) or 0.5 ml (for patients greater than or equal to 5kg)
- **Alternate Choice; Albuterol via nebulizer:** 2.5 mg

Not Routinely Indicated:

- Antibiotics unless evidence of secondary infection / sepsis
- Steroid Therapy
- Chest Physiotherapy (CPT)

7. Parent Education

- Expected clinical course of bronchiolitis and treatment.
- Proper techniques for suctioning and airway maintenance.
- Signs of worsening clinical status and when to call their PCP.
- Smoking Cessation Counseling:
 - Determine patient’s exposure to smoke: when where, who?
 - Explain the hazard of smoke exposure and its relationship to current illness.
 - Emphasize minimizing future exposure to smoke.
 - Refer family members to smoking cessation resources as appropriate:
 - Quit line: 1 (800) 630-QUIT
 - Quitnet: www.co.quitnet.com
 - Provide parent with [Parent Education Materials](#)

8. Discharge Criteria:

(Begin Discharge Planning on Admission)

- SaO₂ at or above 88% when patient is on room air or SaO₂ at or above 90 % on less than or equal to 0.5 lpm O₂ via nasal cannula, including sleeping and feeding, observed for several hours
- Parent able to clear patient’s airway using bulb suctioning
- Patient tolerating oral feedings at a level to maintain hydration
- Parents/Caregivers are proficient with post discharge care
- Home resources are adequate to support the use of any necessary home therapies
- Parents/Caregivers aware of smoke exposure hazards and provided with information/resources to quit smoking

9. Follow-up

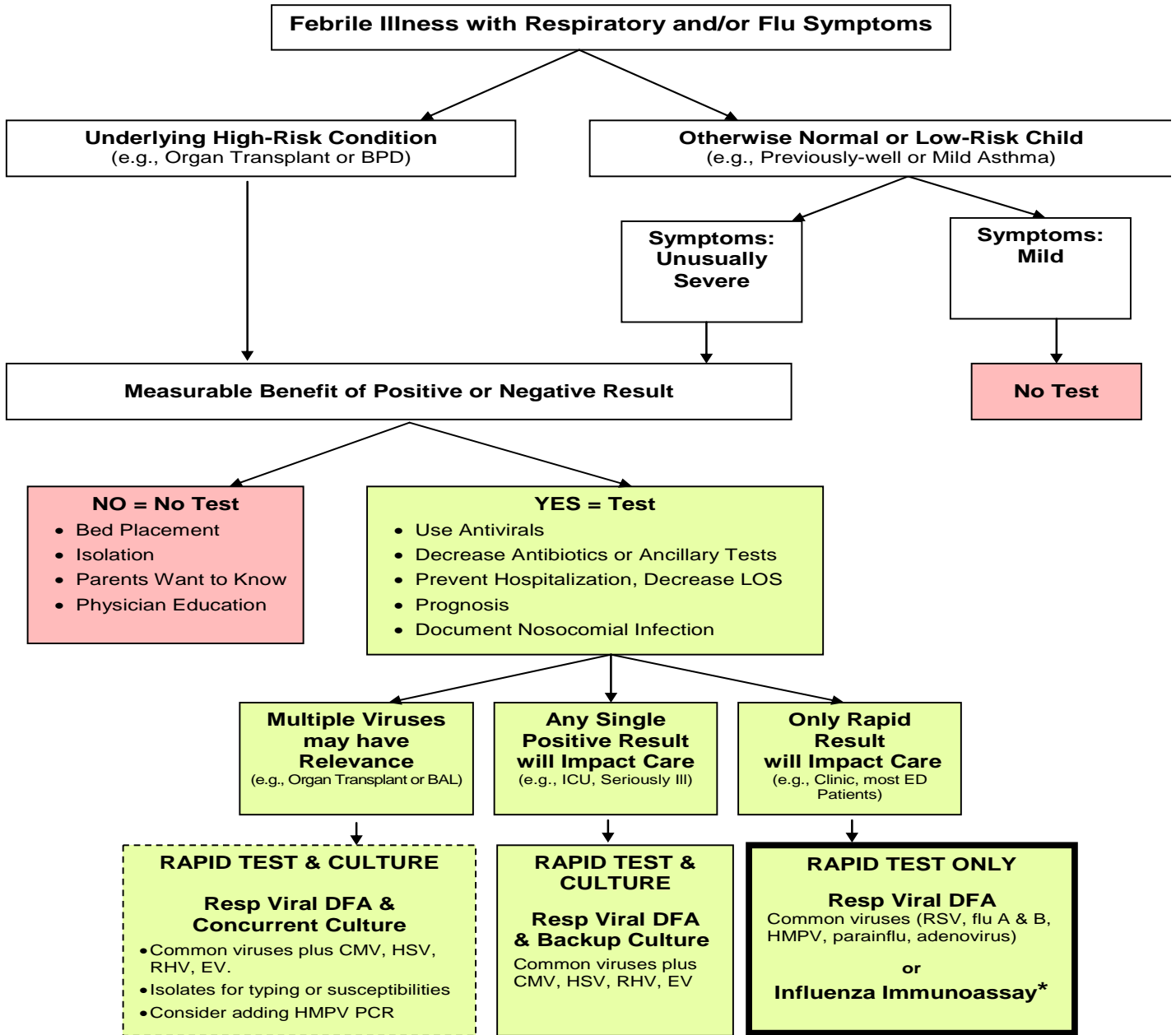
- PCP notified of discharge plan
- PCP follow-up appointment scheduled
- Home care agencies notified and arrangements made when necessary (i.e. home oxygen)

10. Clinical Care Guideline Measures

#	Measures	2008 Target (less than)
	Inpatients	
1	Antibiotics (without coded rationale)	25%
2	Chest Radiographs	25%
3	Inhaled Medications (2 or more doses)	25%
4	RSV/Viral Tests	25%
5	Home Oxygen Utilization Rate	N/A
6	Readmission Rate within 7 days	5%
7	ED visit within 7 days (same illness)	5%
8	Average Length of Stay (hours)	60 hr
	Outpatients	
1	Chest Radiographs	20%
2	Home Oxygen Utilization Rate	N/A
3	Return to ED/Urgent Care within 7 days (same illness)	5%
4	Return to ED/Urgent Care within 7 days - resulting in admission	5%

Figure 1

RESPIRATORY VIRUS TESTING ALGORITHM



* Influenza IA is available ONLY in flu “season” and is less sensitive than DFA. Consider DFA if IA is negative and clinical condition warrants.

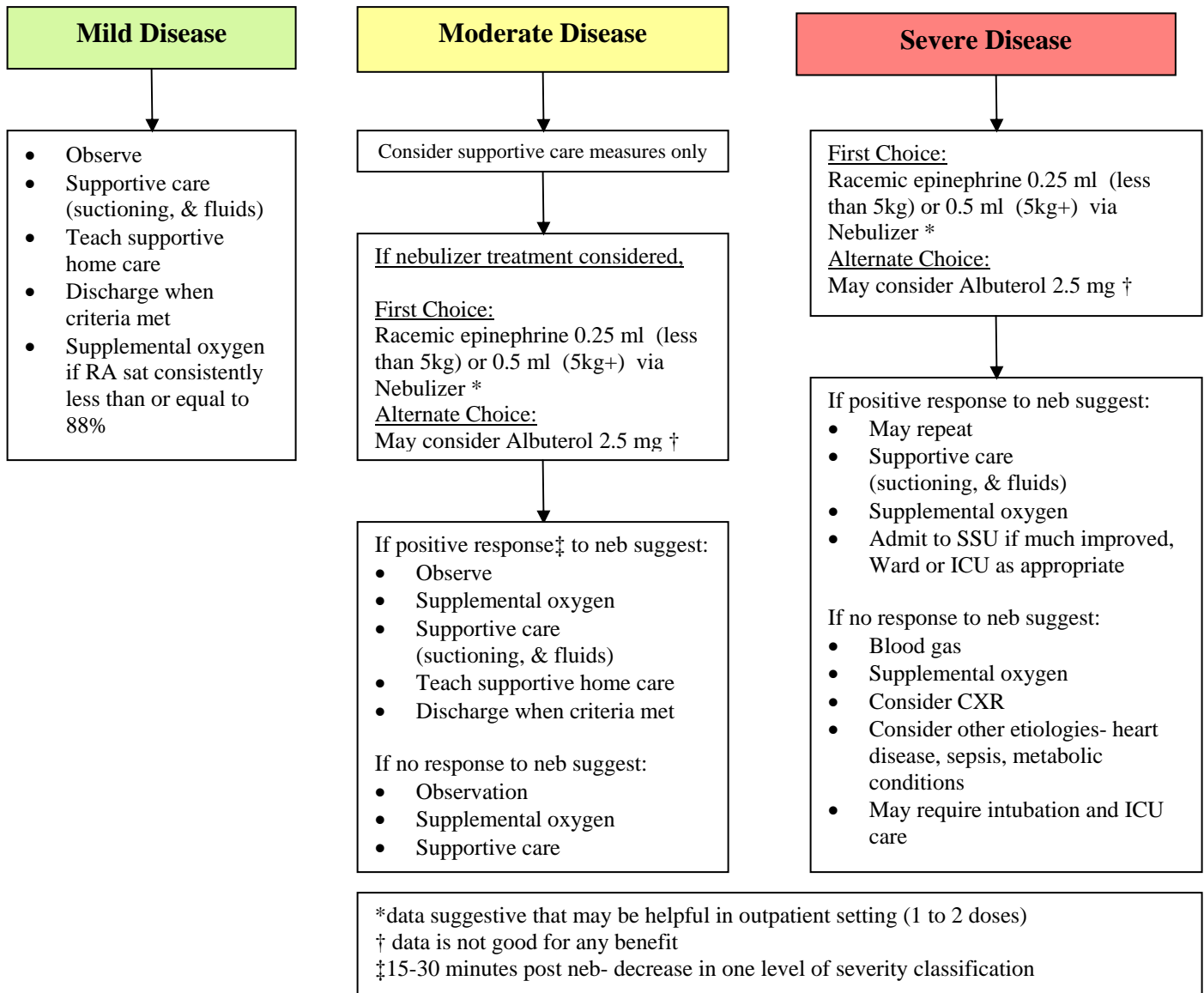
Bronchiolitis Severity Classification

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Figure 2

Bronchiolitis Care Algorithm

All Patients should receive upper airway suctioning prior to classification of disease severity.
Do not use treatment algorithm in the toxic appearing patient.



*data suggestive that may be helpful in outpatient setting (1 to 2 doses)
 † data is not good for any benefit
 ‡15-30 minutes post neb- decrease in one level of severity classification

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Bronchiolitis Admission Orders (Page 2 of 2)

Isolation

All admission orders require isolation order.

Droplet Precautions

Airborne Precautions

Requests

Requests

Request for Social Work

Request for Case Management

Medications

Antipyretics / Pain

<input type="checkbox"/> acetaminophen liquid	EVERY 4 HOURS PRN, give for temp greater than 38.5 C or discomfort
<input type="checkbox"/> acetaminophen PR	Rectal, EVERY 4 HOURS PRN, give for temp greater than 38.5 C or discomfort
<input type="checkbox"/> ibuprofen liquid	EVERY 6 HOURS PRN, give for temp greater than 38.5 C or discomfort

PARENT EDUCATION MATERIALS

1. Bronchiolitis (English)
2. Bronchiolitis (Spanish)
3. RSV (English)
4. RSV (Spanish)
5. Tobacco Smoke (English)
6. Tobacco Smoke (Spanish)
7. Home Nebulizer Treatments (English)
8. Home Nebulizer Treatments (Spanish)

2009 BRONCHIOLITIS CCG TASK FORCE MEMBERS:

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Marsha Anderson	Margaret Ferguson (Kaiser)
Jenny Reese	Carol Okada (Denver Health)
Genie Roosevelt	

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