

Consensus Clinical Guidelines for Inpatient Management of Viral Bronchiolitis:

UCSF Northern California Pediatric Hospital Medicine Consortium

Executive summary

Objectives

- Standardize care of pediatric patients with viral bronchiolitis in the acute care and inpatient settings

Recommendations

- Diagnosis
 - Viral testing, other laboratory tests, and CXRs are not routinely indicated for uncomplicated bronchiolitis.
- Hospital Admission
 - Infection control and isolation should be based on clinical symptoms
 - Pulse oximetry is indicated:
 - First 2-4 hours of admission
 - All patients with an oxygen requirement and 2-4 hours after resolution of O₂ requirement
 - Infants <48 weeks post conceptual age
 - Severe respiratory distress or altered mental status
 - Discharge Criteria: minimal respiratory distress, no oxygen requirement x 12-24 hours, adequate PO hydration
- Treatment
 - Mainstay of treatment is supportive care with supplemental oxygen, nasal saline, gentle suctioning (no deep suctioning), IV fluids if needed
 - Chest PT, albuterol, hypertonic saline, racemic epinephrine, steroids, or antibiotics are NOT ROUTINELY recommended.

Methods

This guideline was developed through local consensus based on published evidence and expert opinion as part of the UCSF Northern California Pediatric Hospital Medicine Consortium.

Metrics Plan

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Consensus Clinical Guidelines

- **Definition of Simple / Uncomplicated Viral Bronchiolitis**
 - Typical age: <3 years
 - Classic symptoms: cough, coryza, +/- respiratory distress or work of breathing, +/- fever
 - Characteristic clinical exam features (lower airway inflammation/obstruction): symmetric / non-focal findings, rhonchi or coarse crackles, wheeze, prolonged expiratory phase
 - First episode of wheeze in child without underlying disease

- **Diagnosis**
 - Clinical diagnosis based on patient's age, history and typical exam findings of lower airway inflammation/obstruction
 - Viral testing:
 - Routine viral testing is NOT indicated – has not been shown to alter clinical management, outcomes, or predict severity of disease
 - Viral testing is indicated IF:
 - Infection control / cohorting for hospital admission (in facilities with shared patient rooms)
 - Unclear diagnosis in infant/child with respiratory symptoms, tachypnea/work of breathing, +/- fever
 - Influenza testing in appropriate clinical scenario (e.g. seasonal, consistent sx)
 - Other laboratory studies:
 - Routine laboratory testing (e.g. CBC) is NOT indicated – has not been shown to affect management or predict severity of disease
 - Additional testing likely indicated IF:
 - Young infant with fever – follow appropriate guidelines for fever in infant <90 days
 - Unclear diagnosis in ill-appearing child
 - Radiology
 - CXR is NOT routinely indicated
 - Indicated if suspicion for airway obstruction or ICU admission

- **Hospital Admission / Discharge**
 - Admission criteria:

- Respiratory distress (based on tachypnea, work of breathing)
- Hypoxia (consistent O2 sat <90% on RA, discounting O2 sats during deep sleep)
- Young age (<4 weeks old or <48 weeks post-conceptual age for preterm infants) +/- history of apnea
- Dehydration or “ill appearance”
- Presence of risk factors for severe disease: history of prematurity, hemodynamically significant CHD, chronic lung disease, immunocompromised state
- Day of illness may influence decision to admit and guide anticipatory counseling for families (NOTE: peak of symptoms = day 3-5)
- Infection control / isolation precautions:
 - Based on clinical symptoms, NOT viral testing results
 - Droplet precautions for ALL patients
 - +/- Contact precautions (based on institutional guidelines)
 - Patients with RSV+ or other definitive viral diagnosis may be cohorted in shared rooms
- Pulse oximetry monitoring:
 - Indications for continuous pulse oximetry monitoring
 - First 2-4 hours of any bronchiolitis admission
 - Young age (<4 weeks or <48 weeks post-conceptual age for preterm infants)
 - Supplemental oxygen requirement + 2-4hrs following discontinuation of supplemental oxygen
 - Severe respiratory distress, “ill appearance”, abnormal mental status (“tired” appearing)
 - Intermittent oxygen saturation checks q4hrs with vital signs for all other cases
- PICU Consultation / Transfer Considerations:
 - Obtain VBG and CXR if clinically worsening and considering transfer
 - Indications:
 - Persistent, severe respiratory distress despite maximal care
 - RR >98th percentile reference value for age
 - Hypercarbia on blood gas
 - Need for escalation of respiratory support beyond capabilities of the pediatric floor at a given institution
- Discharge Planning:
 - Discharge Criteria
 - No or minimal respiratory distress (improved work of breathing)
 - No need for supplemental oxygen x 12-24hrs
 - Adequate PO hydration
 - Hospital Follow-up
 - Follow-up (PMD, acute care, phone) arranged within 2 days of hospital discharge
 - Direct communication between inpatient & outpatient providers (e.g. discharge summary, phone call, email)

■ Treatment

- Supportive care is the preferred treatment for all viral bronchiolitis
 - Supplemental oxygen:
 - Criteria for starting or re-starting supplemental O₂
 - O₂ sat <88% awake or asleep on RA for period of 10-20min
 - O₂ sat persistently <85% at any time
 - Criteria for discontinuing supplemental O₂
 - O₂ sat consistently >90%, no or minimal respiratory distress, adequate PO feeding
 - Supplemental O₂ delivery method depends on institution policies, provider preference, and patient tolerance/comfort (*NOTE*: blow-by O₂ is not a reliable delivery method for supplemental O₂ in patients with significant hypoxia)
 - High-flow Nasal Cannula (HFNC)
 - Potential for increased O₂ delivery, minimally invasive continuous positive airway pressure
 - Consider if available at institution or for transfer to higher level of care (*NOTE*: HFNC not available as O₂ delivery modality on pediatric ward at some institutions)
 - Nasal saline drops/spray:
 - May be used ATC or PRN in patients with symptomatic nasal secretions
 - Nasal suctioning:
 - May be used gently in young infants with symptomatic nasal secretions (*NOTE*: there is no benefit and potential harm with forceful or deep suctioning)
 - Consider use of mushroom tip catheter
 - Chest PT:
 - NOT indicated
 - Hydration: Evaluate hydration status and ability to take fluids orally
 - Consider IV fluids in patients with significant respiratory distress (risk for aspiration or impending respiratory failure) or clear feeding difficulty / dehydration
 - Consider NG tube for enteral hydration and feeds in babies who have feeding difficulty due to illness
 - HFNC is not necessarily a contraindication to PO or NG feeding; use clinical judgment about trajectory of patient
- Hypertonic saline (inhaled 3% sodium chloride)
 - *NOTE*: current variation in practice among institutions
 - Overall mixed evidence that nebulized 3% sodium chloride may decrease length of hospitalization + improve clinical sx / severity of illness in hospitalized patients, but may induce bronchospasm

- NOT recommended for routine / scheduled use in all bronchiolitis
 - Consider trial of 3% nebulized treatment q8hrs ATC x 24hrs in patients with moderate disease; continue if symptomatic improvement and no adverse effects, and discontinue if no improvement. If child experiences significant adverse effects with initial 3% nebulized sodium chloride dose (e.g., bronchospasm, painful cough), providers can decide to add-on bronchodilator (dosed concurrently) to mitigate side effects with subsequent HTS doses, or discontinue HTS therapy altogether, depending on severity of adverse symptoms.
 - Not for use in emergency department
 - Albuterol
 - NOT recommended for routine / scheduled use in all bronchiolitis
 - Trial of albuterol may be indicated if patient is not responding to traditional supportive care; may be continued if beneficial, otherwise should not continue
 - Racemic epinephrine
 - NOT recommended for routine / scheduled use in patients with bronchiolitis
 - Corticosteroids
 - No evidence for benefit
 - NOT recommended for routine use in bronchiolitis
 - Antibiotics
 - NOT recommended for use in bronchiolitis except in children with specific indication of co-existent bacterial infection
- **Other Considerations**
- Bronchiolitis as a fever source
 - In well-appearing infants >1mo with fever, *clinical diagnosis of bronchiolitis or documented viral infection* can generally be considered a source of fever
 - Evidence: occult serious bacterial infection (SBI) or UTI are very rare in well-appearing infants >1mo
 - Strongly consider urine sample for UA and culture in infants <3 months or at high risk for UTI
 - Evidence: infants <3mo or those at high risk for UTI with clinical bronchiolitis have reduced but still significant (~5%) risk of UTI
 - Apnea in young infants
 - Risk factors for apnea with RSV and non-RSV bronchiolitis:
 - Post-conceptual age <48 weeks (greatest risk = <42 weeks)
 - Prematurity
 - Tachypnea or respiratory depression
 - Severe hypoxia (<90% in RA)
 - First 48hrs of illness
 - Consider admission x 24 hours for apnea monitoring in young infants (<4 weeks old or <48 weeks post-conceptual age for preterm infants)

- *NOTE:* May not be necessary for infants that are >48 hours into symptom course (particularly infants nearing upper limit of age cutoff)
- Prevention of RSV: Palivizumab (Synagis) prophylaxis
 - Refer to current AAP guidelines

References

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