

# **BRONCHIOLITIS**

## **What is Bronchiolitis?**

Viral infection of the small airways (bronchioles hence the terms bronchiolitis) causing inflammation. This leads to obstruction and the characteristic wheeze.

It is considered the most common respiratory tract infection in infants (1-2 year olds), affecting 30% of them in Canada.

You will see this on a regular basis as a family doc and emergency doc.

## **What causes Bronchiolitis?**

Mostly the Respiratory Syncytial Virus. This little bugger usually shows up in Canada between the months of November to January.

## **How does Bronchiolitis present?**

It starts with a viral URTI like prodrome that lasts two to three days:

so congestion, cough, and fever

Then you can get a full spectrum of symptoms from the most mild (aka wheezing which also happens to be the most common sign) to moderate (such as crackles) to severe such as respiratory distress.

A lot of these children may also be dehydrated due to the fever and poor intake caused by respiratory difficulties.

## **What are the signs of respiratory distress?**

These are all considered BIG BADNESSES in any child presenting to the office.

Trachypnea (Canadian Paediatric Society Guidelines defines it as more than 60 bpm for 1-2 year olds)

O2 sat lower than 90%

Nasal flaring

Head bobbing

Grunting

Intercostal indrawing

Cynosis

Apnea

## **What are other acute causes of wheezing that should be considered?**

Asthma: Presents with episodes of recurrent wheezing. Wheeze in children under age 1 year should be regarded as caused by bronchiolitis and not asthma.

FB aspiration: Sudden onset, no viral prodrome, may present with stridor

Allergic Reaction: Exposure, Urticaria

Congestive Heart Failure: Cardiac murmur, peripheral edema, FTT

Cystic Fibrosis: FTT with repeated and prolonged respiratory symptoms

None of the following will present with a viral prodrome.

## **What investigations should be ordered?**

NONE. It's a clinical diagnosis.

AVOID ordering CXR routinely since they may lead to over treatment with antibiotics. That is because CXRs are not very useful in differentiating pneumonia from bronchiolitis: consolidation like findings can be seen in either case. Furthermore both can present with wheezing AND crackles. SO Beware this diagnostic dilemma. One clue to differentiate them is that bronchiolitis rarely presents with a fever greater than 39°C.

## **Who should be sent to the ER/Admitted to the wards?**

Most children will have a mild form of bronchiolitis and can be usually managed with supportive care at home. Note that Symptoms can last up to 2 weeks and tend to worsen over the first 72 hours (which may be helpful in deciding whether you should send them to the ER or admit them).

There are a couple of Bronchiolitis severity scoring systems (such as the Tal and Modified Tal score) however they have not demonstrated predictive validity.

In general a child should be admitted if they have:

Respiratory distress

Saturation < 90%

Dehydration

A family that is unable to cope

Consider kids of less than 3 mo or premies at high risk for complications.

I usually send kids to the ER if they have anything worse than a wheeze and/or are hydrating poorly. Even then and especially, if it is the beginning of the illness (remember things get worse over the first 72 hours), I will contact the parents the next day or arrange a fu in clinic within 24 hours.

*KEVIN what about yourself? When would you phone a grown up?*

## **How is Bronchiolitis treated?**

### **EVIDENCE SUPPORTS**

#### **1) Oxygen**

To keep sats over 90%

Can do it using a nasal cannula, face mask or head box (looks scary, *do you use them Kevin?*)

There is some evidence that humidified high flow nasal cannula therapy may be better tolerated and may decrease the need for mechanical ventilation BUT jury still out on that.

#### **2) Hydration**

Up to 1/3 of patients that are in hospital may require hydration. This may be done through oral means and breastfeeding if child is stable. Children in resp distress and with nasal congestion may not be safe to feed orally since they are at an increased risk of aspiration. IV and NG routes are equally effective. NG tubes tend to be inserted more easily compared to IVs (*what is your preference Kevin?*). It is suggested to use isotonic fluids (0.9% NaCL/5% dextrose) for IV maintenance. Don't forget to check on the Na on a regular basis. These folk can get hyponatremic.

### **EVIDENCE EQUIVOCAL**

#### **1) Epinephrine**

Nebulized epinephrine may reduce hospital admissions but does not seem to affect length of hospital stay. There is some evidence that by adding oral dexamethasone you may further reduce hospital admissions. Still the CPS does not recommend this treatment routinely.

## **2) Nasal suctioning**

Deep suctioning may be harmful and is associated with an increased length of hospital stay. It should be done superficially and frequently.

## **3) Hypertonic saline (3%) nebulization**

It may be helpful for kids that are admitted. It may reduce the length of hospital stay. Should not be used routinely.

## **EVIDENCE OF NO EFFECT**

### **1) Salbutamol**

No benefit to using this. Note that bronchiolitis is an obstructive disorder, not constrictive so salbutamol should not have an effect.

### **2) Corticosteroids Inhaled or Oral**

No clinically significant improvement noted.

### **3) Antibiotics**

Bronchiolitis is a viral illness and secondary bacterial infections are unlikely. So antibiotics should be avoided.

### **4) Antivirals**

Antivirals such as Ribavirin should only be considered in children at risk for particularly severe disease. PHONE A GROWN UP BEFORE USING THEM.

### **5) Chest Physiotherapy**

No evidence of benefit. Not recommended

## **How long does it take for bronchiolitis to go away?**

I tell parents that their child will get better after 3 days. But it may take 2 whole weeks for most of the symptoms to go away. The cough itself can last for up to 2 months. Persistent wheeze is experienced by approximately 40% of infants who are hospitalised due to bronchiolitis, continuing up to age five years. Approximately 10% will continue to have wheezing episodes after age five years, but by age 13 years, wheeze will have resolved in most children. Note that this wheeze may not be responsive to ICS therapy.

## **REFERENCES**

Friedman JN, Rieder MJ, Walton JM. Bronchiolitis: Recommendations for diagnosis, monitoring and management of children one to 24 months of age. *Paediatr Child Health*. 2014;19(9):485-91

Best E, Shepherd M, McNamara D, Heather M. Bronchiolitis in infants. *Best Practice Journal*. 2012; BPJ:46.

American Academy of Pediatrics, Subcommittee on Diagnosis and Management of Bronchiolitis. Diagnosis and management of bronchiolitis. *Pediatrics* 2006; 118(4):1774-93.

