

# Técnicas kinésicas y bronquiolitis

Lic. Mariana Silva

# Bronquiolitis

“ Primer (o segundo) episodio de sibilancias asociado a manifestaciones clínicas de infección viral en un niño menor de dos años.

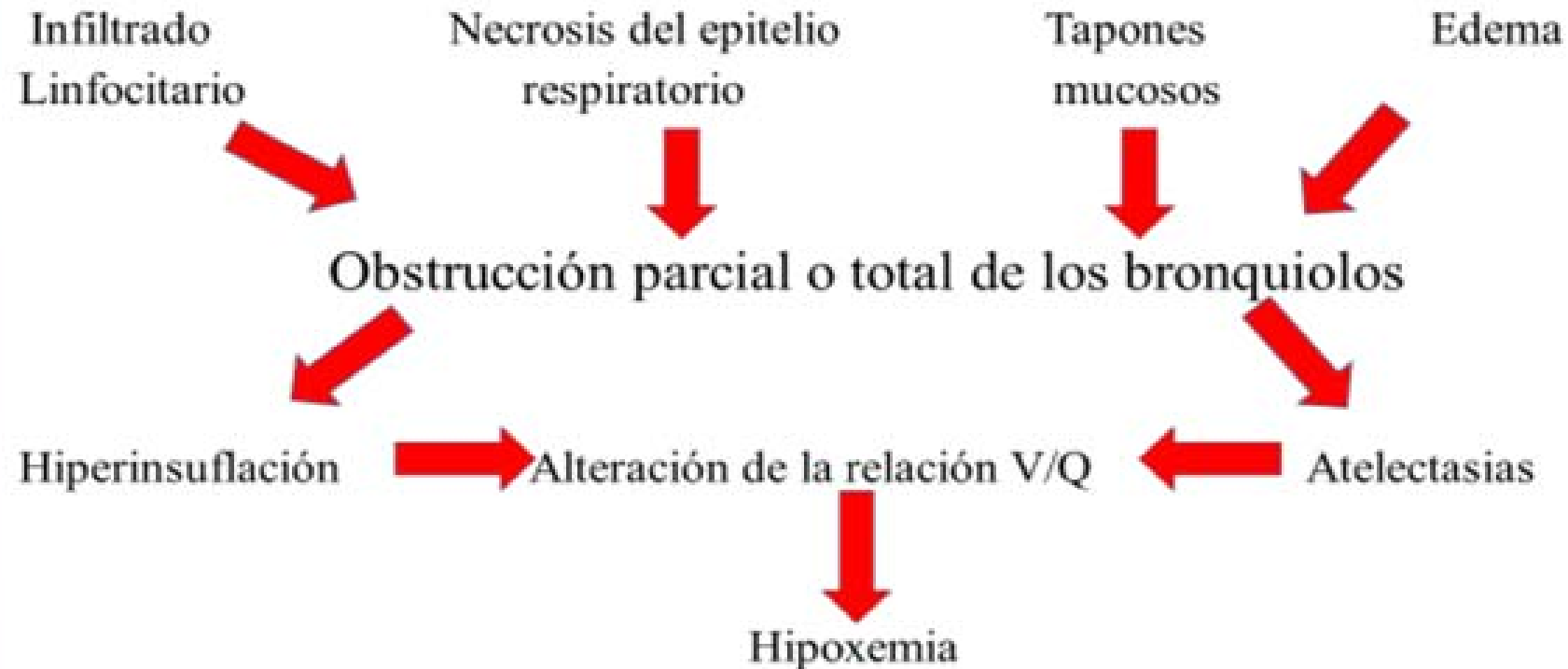
Es una inflamación difusa y aguda de las vías aéreas inferiores, de naturaleza infecciosa (IRAB), expresada clínicamente por obstrucción de la vía aérea pequeña”.

**Recomendaciones para el manejo de las infecciones respiratorias agudas bajas en menores de 2 años**

*Recommendations for the management of acute lower respiratory infections in children under 2 years of age*

*Comité Nacional de Neumonología, Comité Nacional de Infectología y Comité de Medicina Interna.*

## Bronquiolitis: fisiopatología



La hipersecreciones es el elemento predominante de la obstrucción bronquial del niño pequeño, esto otorga a la fisioterapia un papel importante.

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TABLA 3. Puntaje clínico de gravedad en la obstrucción bronquial (modificado de Tal y col.)<sup>55</sup>

Frec. card.	Frec. resp.		Sibilancias	Uso de accesorios	Puntos
	< 6 meses	> 6 meses			
< 120	< 40	< 30	No	No	0
120-140	40-55	30-45	Fin de espiración	Leve intercostal	1
140-160	55-70	45-60	Inspir./espir.	Tiraje generalizado	2
> 160	> 70	> 60	Sin estetoscopio	Tiraje + aleteo nasal	3

La valoración a través del puntaje de Tal modificado permite establecer categorías de gravedad que se correlacionan con la saturación de O<sub>2</sub> por oximetría de pulso (spO<sub>2</sub>) del paciente que respira aire ambiental:

- 4 puntos o menos: leve (< 98%).
- De 5 a 8 puntos: moderada (93%-97%).
- 9 puntos o mas: grave (< 92%).

# Tratamiento de sostén

- Oxigenoterapia
- Hidratación
- Alimentación
- Posicionamiento en la cama
- Despejar fosas nasales
- Tratamiento farmacológico

**Academia Americana de Pediatría 2006**  
**Guía de Consenso de Reino 2006**  
**Asociación de Pediatría 2010**

## Bronquiolitis en pediatría: puesta al día

Pérez Rodríguez MJ. Facultativo Especialista en Pediatría. Servicio de Pediatría. Hospital del Henares, Madrid.  
 Otheo de Tejada Barasoain E. Facultativo Especialista en Pediatría. Servicio de Pediatría. Hospital Universitario Ramón y Cajal, Madrid.  
 Ros Pérez P. Facultativo Especialista en Pediatría. Servicio de Pediatría. Hospital Universitario Puerta de Hierro, Madrid.

No se recomienda el uso de fisioterapia respiratoria durante la fase aguda de la enfermedad<sup>(14,21)</sup>. Las técnicas de vibración y percusión no disminuyen ni la duración de la hospitalización ni el tiempo de oxigenoterapia ni producen una mejoría de los parámetros clínicos.

### CHEST PHYSIOTHERAPY

#### Key Action Statement 7

**Clinicians should not use chest physiotherapy for infants and children with a diagnosis of bronchiolitis (Evidence Quality: B; Recommendation Strength: Moderate Recommendation).**

#### Action Statement Profile KAS 7

Aggregate evidence quality	B
Benefits	Decreased stress from therapy, reduced cost
Risk, harm, cost	None
Benefit-harm assessment	Benefits outweigh harms
Value judgments	None
Intentional vagueness	None
Role of patient preferences	None
Exclusions	None
Strength	Moderate recommendation
Differences of opinion	None

# Guías de bronquiolitis

### CHEST PHYSIOTHERAPY

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### Recomendaciones para el manejo de las infecciones respiratorias agudas bajas en menores de 2 años

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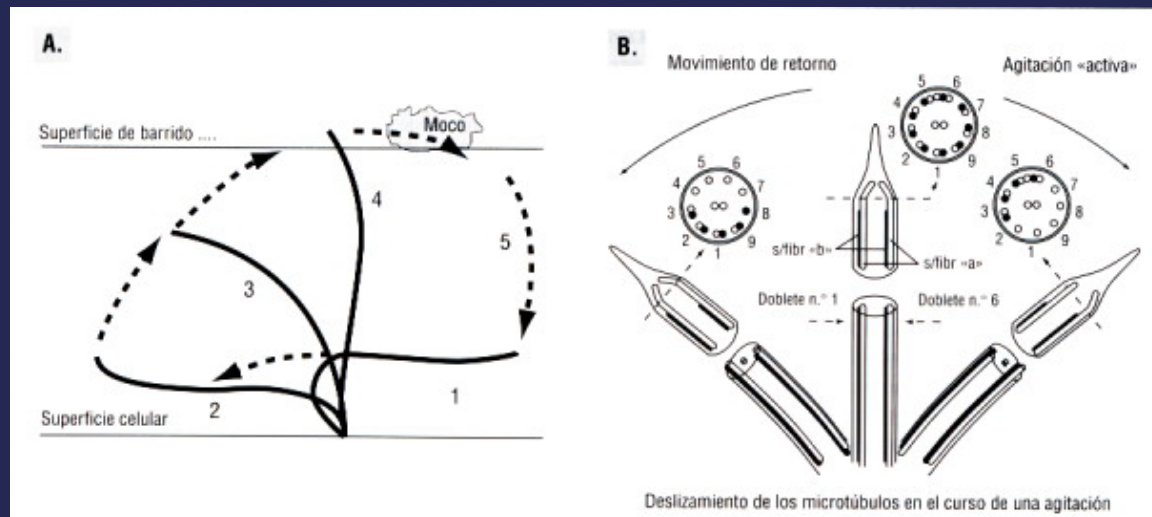
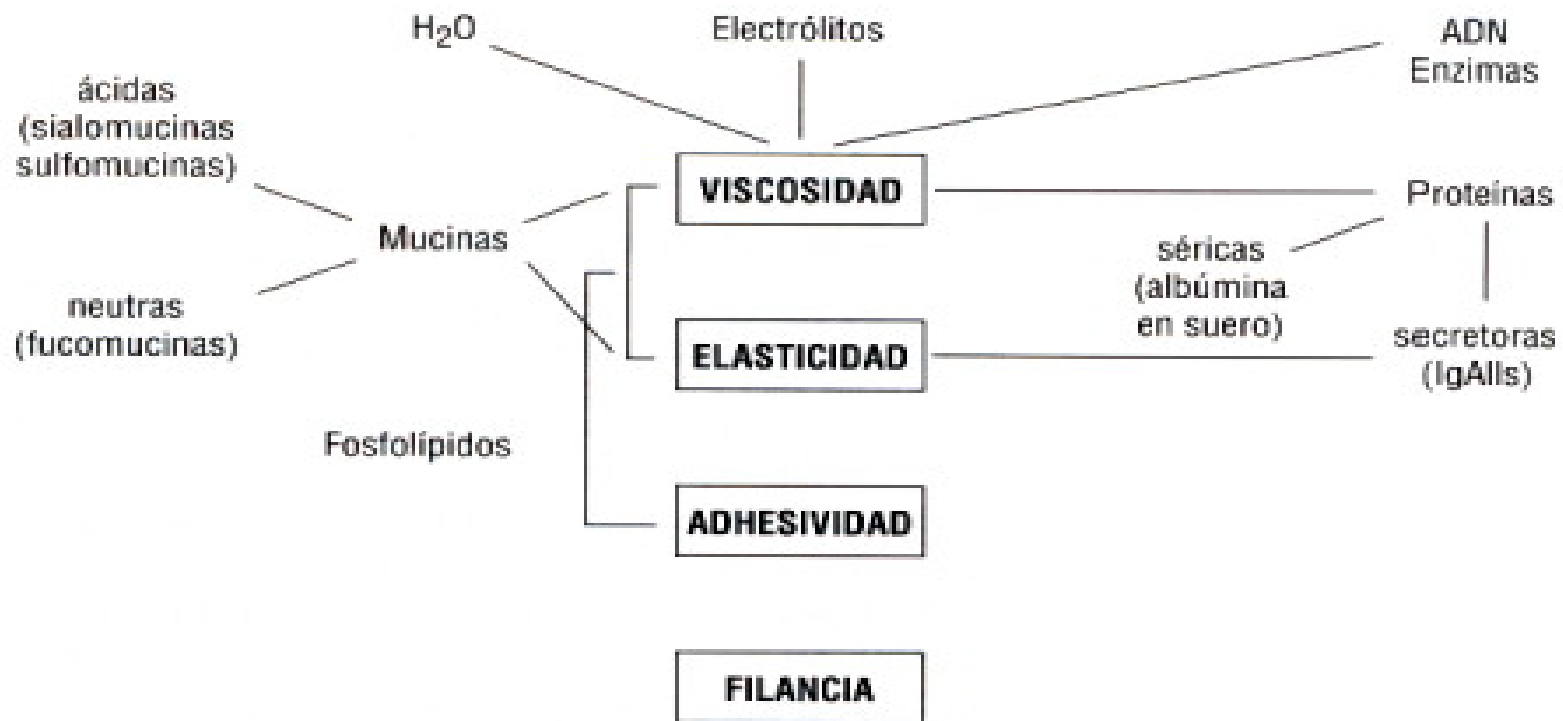
Comité Nacional de Neumonología, Comité Nacional de Infectología y Comité de Medicina Interna.

**Kinesioterapia:** Su aplicación no es necesaria en los pacientes ambulatorios. Se recomendará a los padres mantener las narinas permeables mediante la aspiración de las secreciones y mantener al paciente en posición semisentada. Para los que requieran internación, rigen estas mismas recomendaciones, que serán implementadas por el personal de enfermería. Se podrá recurrir a kinesioterapia cuando existan abundantes secreciones que puedan aumentar el riesgo de originar atelectasia. Se deberá elegir la técnica adecuada, recordando el riesgo de desencadenar broncoobstrucción inducida por la terapia. En todos los casos, se deberán valorar riesgos y beneficios; es recomendable probar inicialmente la tolerancia a este tratamiento con control de oximetría de pulso.<sup>65</sup>

En los casos en que se requiera kinesioterapia, esta deberá ser llevada a cabo por un profesional idóneo.

La fisioterapia respiratoria en pediatría se fundamenta en tres objetivos:

- Un objetivo principal que consiste en evacuar o reducir la obstrucción bronquial, consecuencia del fracaso de los medios naturales de limpieza bronquial.
- Unos objetivos secundarios a corto y mediano plazo: la prevención en el tratamiento de las atelectasia y la hiperinsuflacion pulmonar.
- En ultima instancia y de manera hipotética, trabaja con un objetivo terciario potencial de prevención de los daños estructurales evitando cicatrices lesionales y la perdida de elasticidad que las infecciones broncopulmonares causan al aparato respiratorio del niño pequeño.





# Técnicas kinésicas

- **Técnicas principales:**

Técnicas espiratorias lentas

Técnicas espiratorias forzadas

Técnicas inspiratorias lentas

Técnicas inspiratorias forzadas

- **Técnicas coadyuvantes:**

Técnica postural

La ventilación con presión positiva espiratoria

Las vibraciones manuales o instrumentales

Llanto y ejercicio físico

Dentro del primer grupo (técnicas principales), distinguimos:

- las técnicas espiratorias lentas
- las técnicas espiratorias forzadas
- las técnicas inspiratorias lentas
- las técnicas inspiratorias forzadas

En el segundo grupo (técnicas coadyuvantes), distinguimos:

- la técnica postural
- la ventilación con presión positiva espiratoria
- los complementos mecánicos
- las vibraciones manuales e instrumentales
- y analizamos el caso particular del llanto y del ejercicio físico.

G. Postiaux



## Fisioterapia respiratoria en el niño

### Árbol de decisión de fisioterapia respiratoria.

TVO: trastorno ventilatorio obstructivo.

DRR: desobstrucción rinofaríngea retrógrada,

TP: tos provocada,

TD: tos dirigida,

TEF-AFE: técnica espiratoria forzada o aumento del flujo espiratorio,

BTE: bombeo traqueal espiratorio,

ELPr: espiración lenta prolongada,

ELTGOL: espiración lenta total con glotis abierta en intralateral,

DA: drenaje autógeno,

EDIC: ejercicio con débito inspiratorio controlado,

EI: espirometría incentivada,

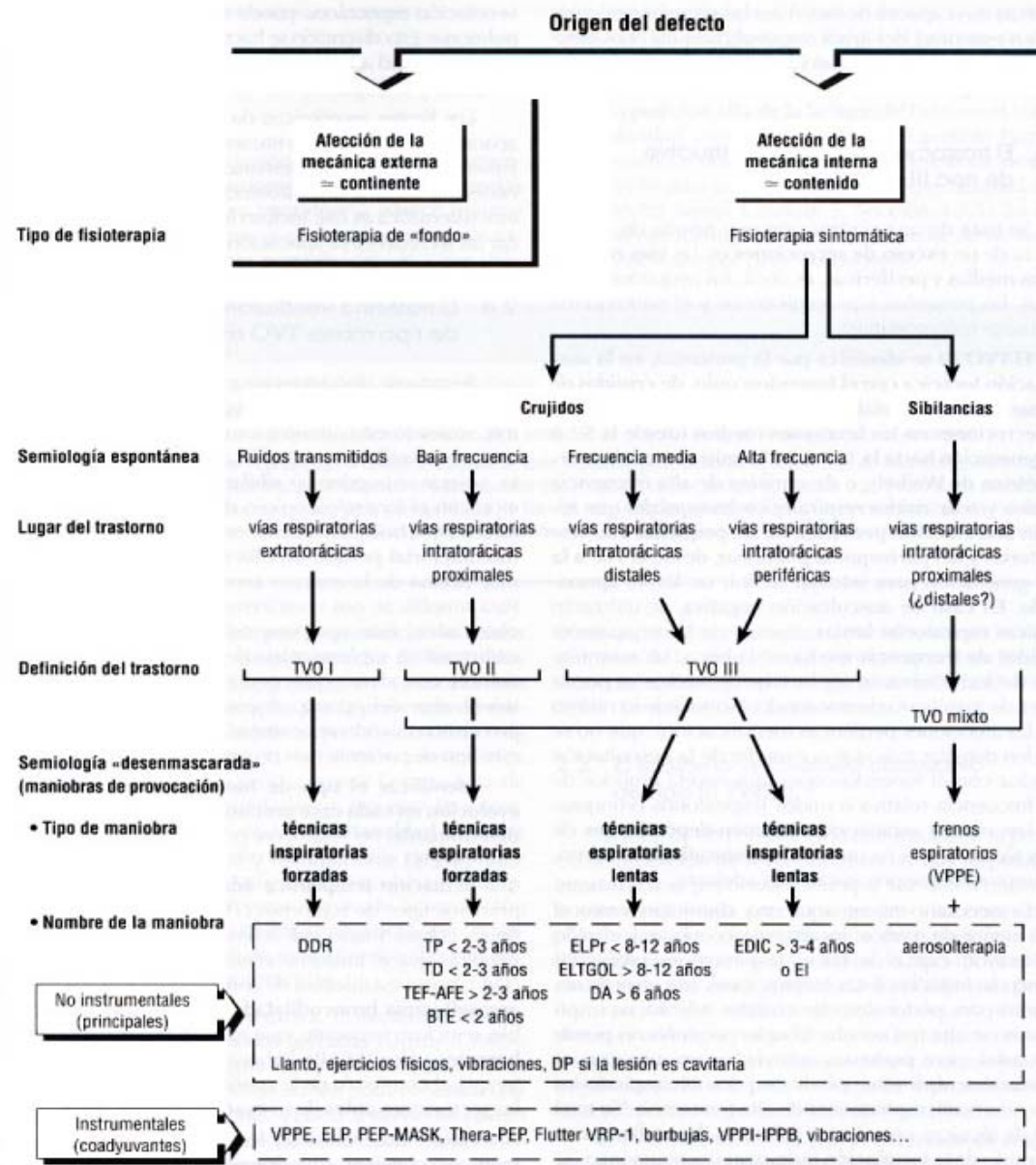
DP: drenaje postural,

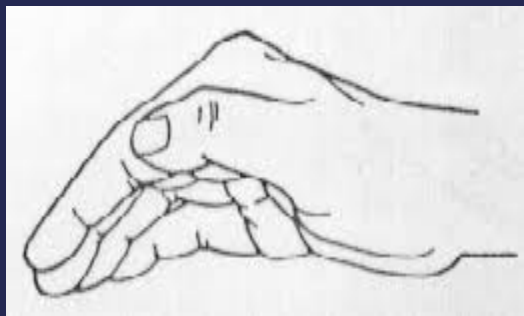
VPPE: ventilación con presión positiva espiratoria,

ELP: espiración con los labios pinzados,

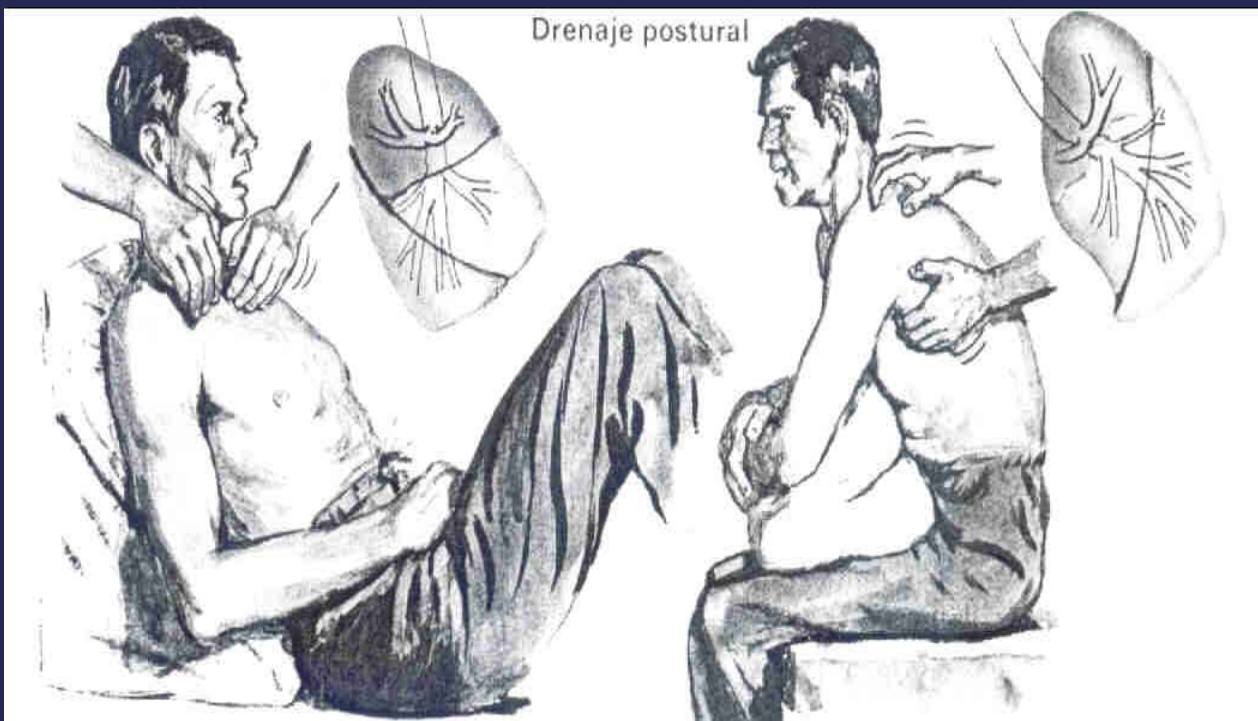
VPPI: ventilación con presión positiva inspiratoria o IPPB (*intermittent positive pressure breathing*).

### Árbol de decisión



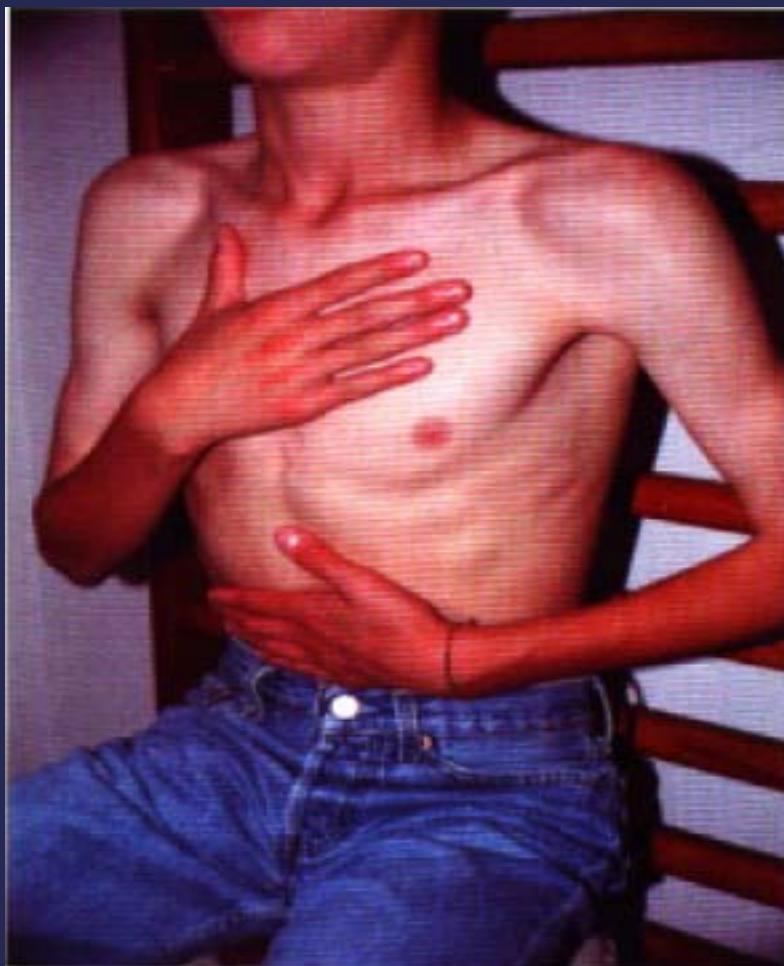


In Anglo-Saxon countries, in the 1960s, CPT in adults and children was called forced expiratory technique, and was associated with postural drainage and clapping; it was referred to as conventional CPT..





In France, increased-exhalation technique has been widely used in various ways since the 1970s.





Diferencias anatomo funcionales del niño

## Técnica de espiración lenta y prolongada





Prescripción:  
Francia: 95%  
Belgica: 76 %  
Canada: 13 %

**Tableau I**  
Hospitalisation et mortalité dues à la bronchiolite aiguë du nourrisson.

Pays	Âge des patients	Taux d'hospitalisation	Durée d'hospitalisation	Mortalité respiratoire
France 2009 [1]	Moins de 1 an	35,8/1000	4,3 jours	2,6/100 000
Angleterre 2002/2003 [38]	Moins de 2 ans	30,8/1000	2,7 jours	2,4/100 000
États-Unis 2007 [39] 2009 [37]	Moins de 1 an	23,50/1000	2,4 jours	2,4/100 000



**Tableau II**  
**Études publiées sur la kinésithérapie respiratoire dans la bronchiolite aiguë du nourrisson.**

Étude	Technique	Critère de jugement	Nombre d'enfants	Lieu de l'étude	Résultats	Type d'étude	Commentaires
Webb [9]	PV	Durée d'évolution	90	Hôpital, Angleterre	Pas de différence	Prospective	Technique inappropriée
Ralston [19]	PV	Utilisation de la KR	11 568	Hôpitaux, États-Unis	Diminution de 14 à 4 %	Prospective	Observationnelle
Gajdos [20]	AF + toux provoquée	Délai de guérison	496	Hôpitaux, France	Évolution idem Confort ressenti idem	Prospective	
Rochat [22]	ELP AF	Stabilité clinique	99	Hôpital, Genève	Pas de différence	Monocentrique	Pas de réelle durée d'hospitalisation
Sanchez [23]	ELP AF + toux provoquée	Durée d'hospitalisation et d'utilisation de l'oxygène	236	Hôpital, Espagne	Pas de différence	Double insu	Biais : utilisation de broncho-dilatateurs, corticoïdes...
Pupin [26]	ELP PV	SpO <sub>2</sub> , fréquence respiratoire et cardiaque	81	Hôpital, Brésil	Pas de différence	Monocentrique	Critères cliniques Petite cohorte
Gomes [27]	ELP + déglutition rétrograde PV DRP	Score de Wang	30	Hôpital, Brésil	Amélioration à j3 dans le groupe ELP	Monocentrique	Effectifs réduits Score clinique
Postiaux [30]	SSH SSH+ ELP	Score de Wang SpO <sub>2</sub>	20	Hôpital, Belgique	Diminution du score de Wang	Monocentrique	Effectifs réduits Pas de durée d'évolution

*PV : percussion/vibration ; AF : accélération de flux ; ELP : expiration lente prolongée ; DRP : désobstruction rhinopharyngée ; SSH : sérum salé hypertonique ; KR : kinésithérapie respiratoire ; SpO<sub>2</sub> : saturation pulsée en oxygène*



1078 *Archives of Disease in Childhood*, 1985, 60

## Chest physiotherapy in acute bronchiolitis

M S C WEBB, J A MARTIN, P H T CARTLIDGE, Y K NG, AND N A WRIGHT

*Departments of Paediatrics and Physiotherapy, City Hospital, Hucknall Road, Nottingham*

“Chest physiotherapy requires considerable handling, and as we have been unable to show any benefit from its use, we recommend that physiotherapy should not be used routinely in the management of acute bronchiolitis.”



**Cochrane**  
**Library**

Cochrane Database of Systematic Reviews

## **Chest physiotherapy for acute bronchiolitis in paediatric patients between 0 and 24 months old (Review)**

Roqué i Figuls M, Giné-Garriga M, Granados Rugeles C, Perrotta C, Vilaró J

### **Main results**

We included 12 RCTs (1249 participants), three more than the previous Cochrane review, comparing physiotherapy with no intervention. Five trials (246 participants) evaluated conventional techniques (vibration and percussion plus postural drainage), and seven trials (1003 participants) evaluated passive flow-oriented expiratory techniques: slow passive expiratory techniques in four trials, and forced passive expiratory techniques in three trials.

Conventional techniques failed to show a benefit in the primary outcome of change in severity status of bronchiolitis measured by means of clinical scores (five trials, 241 participants analysed). Safety of conventional techniques has been studied only anecdotally, with one case of atelectasis, the collapse or closure of the lung resulting in reduced or absent gas exchange, reported in the control arm of one trial.

Slow passive expiratory techniques failed to show a benefit in the primary outcomes of severity status of bronchiolitis and in time to recovery (low quality of evidence). Three trials analysing 286 participants measured severity of bronchiolitis through clinical scores, with no significant differences between groups in any of these trials, conducted in patients with moderate and severe disease. Only one trial observed a transient significant small improvement in the Wang clinical score immediately after the intervention in patients with moderate severity of disease. There is very low quality evidence that slow passive expiratory techniques seem to be safe, as two studies (256 participants) reported that no adverse effects were observed.

Forced passive expiratory techniques failed to show an effect on severity of bronchiolitis in terms of time to recovery (two trials, 509 participants) and time to clinical stability (one trial, 99 participants analysed). This evidence is of high quality and corresponds to patients with severe bronchiolitis. Furthermore, there is also high quality evidence that these techniques are related to an increased risk of transient respiratory destabilisation (risk ratio (RR) 5.4, 95% confidence interval (CI) 1.6 to 18.4, one trial) and vomiting during the procedure (RR 10.2, 95% CI 1.3 to 78.8, one trial). Results are inconclusive for bradycardia with desaturation (RR 1.0, 95% CI 0.2 to 5.0, one trial) and bradycardia without desaturation (RR 3.6, 95% CI 0.7 to 16.9, one trial), due to the limited precision of estimators. However, in mild to moderate bronchiolitis patients, forced expiration combined with conventional techniques produced an immediate relief of disease severity (one trial, 13 participants).

None of the chest physiotherapy techniques analyzed in this review (conventional, slow passive expiratory techniques or forced expiratory techniques) have demonstrated a reduction in the severity of disease. For these reasons, these techniques cannot be used as standard clinical practice for hospitalized patients with severe bronchiolitis. There is high quality evidence that forced expiratory techniques in severe patients do not improve their health status and can lead to severe adverse events.

Slow passive expiratory techniques provide an immediate and transient relief in moderate patients without impact on duration. Future studies should test the potential effect of slow passive expiratory techniques in mild to moderate non-hospitalised patients and patients who are respiratory syncytial virus (RSV) positive. Also, they could explore the combination of chest physiotherapy with salbutamol or hypertonic saline.

# Chest Physical Therapy in Acute Viral Bronchiolitis: An Updated Review

Guy Postiaux PT, Bruno Zwaenepoel PT, and Jacques Louis MD

**Introduction**

**Physiopathology of Acute Viral Bronchiolitis**

**Treatments in Acute Viral Bronchiolitis**

**Medications**

**Chest Physical Therapy**

**Summary**

**We describe the various therapies for infant acute viral bronchiolitis and the contradictory results obtained with chest physical therapy. The treatment target is bronchial obstruction, which is a multifactorial phenomenon that includes edema, bronchoconstriction, and increased mucus production, with a clinical grading defined as severe, moderate, or mild. Chest physical therapy is revisited in its various modalities, according to preliminary scoring of the disease. *Key words: infant acute viral bronchiolitis; bronchial obstruction; chest physical therapy; airway mucus clearance.* [Respir Care 2013;58(9):1541–1545. © 2013 Daedalus Enterprises]**

**Table 1.** Wang's clinical severity score. The score assigns a value between 0 and 3 to each variable, higher scores indicates a worst condition.

Variables	Scores			
	0	1	2	3
Respiratory rate, breaths/min=RR	<30	31-45	46-60	>60
Wheezing=WH	None	Terminal expiratory or only with stethoscope	Entire expiration or audible on expiration without stethoscope	Inspiration and expiration without stethoscope
Retraction=RE	None	Intercostal only	Tracheosternal	Severe with nasal flaring
General condition=GC	Normal			Irritable, lethargic, poor feeding

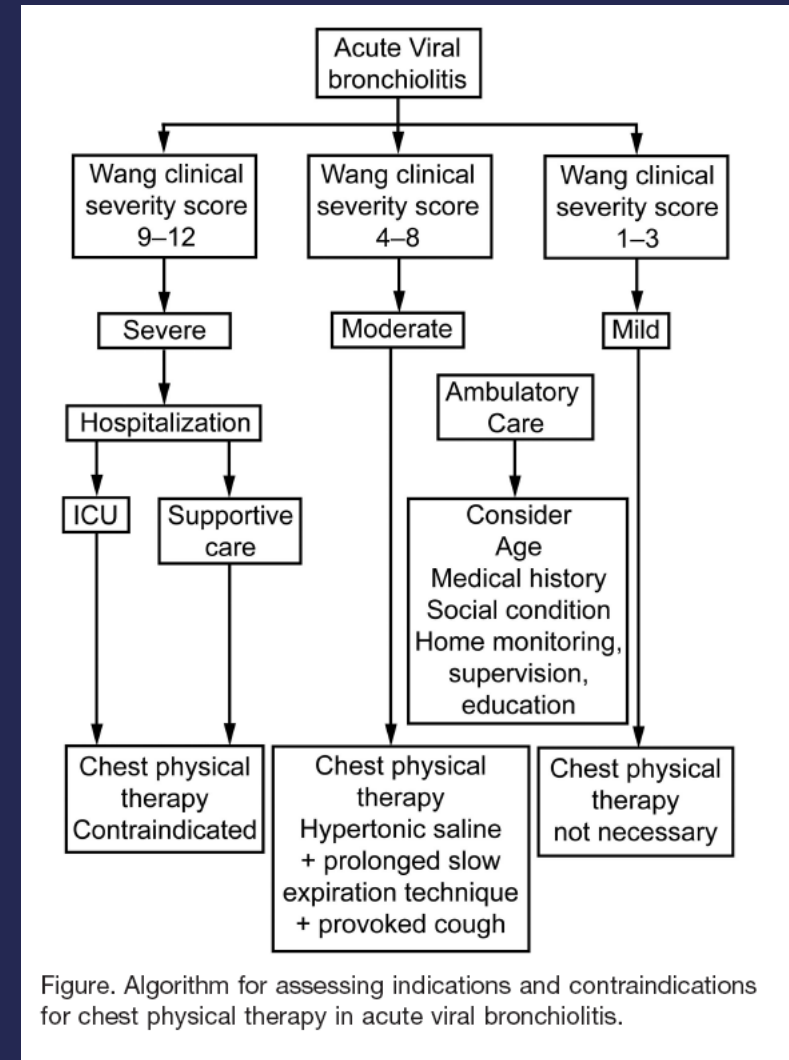


Figure. Algorithm for assessing indications and contraindications for chest physical therapy in acute viral bronchiolitis.

## Effectiveness of Airway Clearance Techniques in Children Hospitalized With Acute Bronchiolitis

F. Van Ginderdeuren, PT, MSc,<sup>1,2\*</sup> Y. Vandenas, MD, PhD,<sup>3</sup> M. Deneyer, MD, PhD,<sup>3</sup>  
S. Vanlaethem, PT, MSc,<sup>2</sup> R. Buyl, PT, PhD,<sup>4</sup> and E. Kerckhofs, PT, PhD<sup>1</sup>

**Summary.** Objective: To evaluate the effectiveness of two airway clearance techniques (ACTs) in children <24 months hospitalized with mild to moderate bronchiolitis. Design: One hundred and three children were randomly allocated to receive one 20-min session daily, either assisted autogenic drainage (AAD), intrapulmonary percussive ventilation (IPV), or bouncing (B) (control group), ninety-three finished the study. Outcome measures: Mean time to recovery in days was our primary outcome measure. The impact of the treatment and the daily improvement was also assessed by a validated clinical and respiratory severity score (WANG score), heart rate (HR), and oxygen saturation (SaO<sub>2</sub>). Results: Mean time to recovery was 4.5 ± 1.9 days for the control group, 3.6 ± 1.4 days,  $P < 0.05$  for the AAD group and 3.5 ± 1.3 days,  $P = 0.03$  for the IPV group. Wang scores improved significantly for both physiotherapy techniques compared to the control group. Conclusion: Both ACTs reduced significantly the length of hospital stay compared to no physiotherapy. *Pediatr Pulmonol.* 2017;52:225–231. © 2018 Wiley Periodicals, Inc.

**Key words:** airway clearance techniques; respiratory physiotherapy; intrapulmonary percussive ventilation; autogenic drainage; bronchiolitis.

Assisted autogenic drainage (AAD)      Intrapulmonary percussive ventilation (IPV)

# **Acute Bronchiolitis—Should We Be Doing More?**

**Siobhan B. Carr, MBBS, MSc, FRCPCH,<sup>1\*</sup> and Eleanor Main, BSc, BA, MSc, PhD<sup>2</sup>**

**Pediatric Pulmonology 52:279–280 (2017)**



Muchas gracias por su atención

