Nuevas herramientas terapéuticas y sus controversias en patología respiratoria

2do Congreso Argentino de Medicina Interna Pediátrica

Dr. Javier Muntaner
Hospital Eva Perón
Tucumán

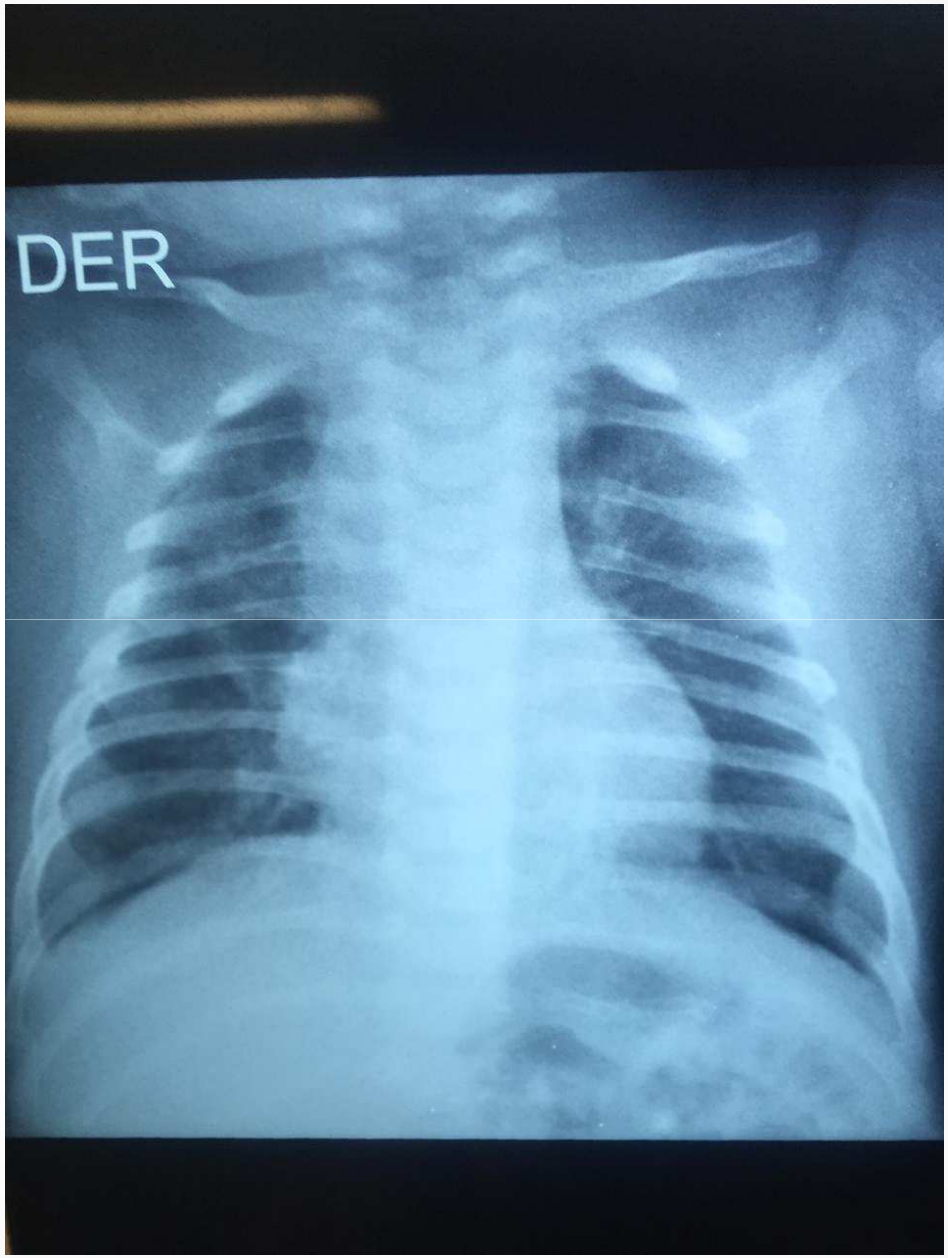
Caso clínico Nº 1

- Paciente de 47 días de vida, regular estado general, afebril, consulta por agitación, sibilancias audibles sin estetoscopio, rales subcrepitantes en base pulmonar derecha, tiraje sub e intercostal.

- Signos vitales: Frec. resp. 72 x`, taquicardia 169 x`, Sat. O2 88% aire ambiental.

- Cianosis peribucal referida por su madre, en 2 ocasiones en las últimas 12 horas.

- Antec: previamente sano, RNT (38,6 SEG), peso nac. 3,45 kg, sin comorbilidades perinatales.


DER

¿Cual es su conducta inicial?

- 1) Internación + Oxígeno
- 2) Salbutamol + control ambulatorio en 24 hs, análisis de laboratorio (HMC), VSNF
- 3) Solución hipertónica + antitérmicos
- 4) Salbutamol + Ceftriaxona endovenosa

Diagnóstico: bronquiolitis

- 1) Internación + Oxígeno
- 2) Salbutamol + control ambulatorio en 24 hs, análisis de laboratorio (HMC), VSNF
- 3) Solución hipertónica + antitérmicos
- 4) Salbutamol + Ceftriaxona endovenosa

- 1) Internación + Oxígeno
- 2) Salbutamol + control ambulatorio en 24 hs, análisis de laboratorio (HMC), VSNF
- 3) Solución hipertónica + antitérmicos
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Cochrane Library

Cochrane Database of Systematic Reviews

Bronchodilators for bronchiolitis (Review)

Gadomski AM, Scribani MB

2014

Bronchodilators such as albuterol or salbutamol do not improve oxygen saturation, do not reduce hospital admission after outpatient treatment, do not shorten the duration of hospitalization and do not reduce the time to resolution of illness at home. Given the adverse side effects and the expense associated with these treatments, bronchodilators are not effective in the routine management of bronchiolitis. This meta-analysis continues to be limited by the small sample sizes and the lack of standardized study design and validated outcomes across the studies. Future trials with large sample sizes, standardized methodology across clinical sites and consistent assessment methods are needed to answer completely the question of efficacy.

- No mejora Saturación de oxígeno
- No disminuye la admisión hospitalaria
- No acorta la internación
- No reduce el tiempo de resolución de la enfermedad

Podría un pequeño grupo beneficiarse, pero esto No justifica su uso.

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Clinical Practice Guideline: The Diagnosis, Management, and Prevention of Bronchiolitis

Shawn L. Ralston, Allan S. Lieberthal, H. Cody Meissner, Brian K. Alverson, Jill E. Baley, Anne M. Gadomski, David W. Johnson, Michael J. Light, Nizar F. Maraqa, Eneida A. Mendonca, Kieran J. Phelan, Joseph J. Zorc, Danette Stanko-Lopp, Mark A. Brown, Ian Nathanson, Elizabeth Rosenblum, Stephen Sayles III and Sinsi Hernandez-Cancio

Pediatrics; originally published online October 27, 2014;
DOI: 10.1542/peds.2014-2742

Multicenter Study of Albuterol Use Among Infants Hospitalized with Bronchiolitis

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DOI: 10.5811/westjem.2018.3.35837

- 2018
- 17 centros
- 1046 pacientes
- Menores 1 año

Table 1. Characteristics of infants hospitalized for bronchiolitis and pre-admission albuterol use.

Characteristics	All (n=1008) n (%)	Did not receive pre-admission albuterol (n=500) n (%)	Received pre-admission albuterol (n=508) n (%)	P-value
Previous use of bronchodilator	445 (44%)	158 (32%)	287 (57%)	<0.001

Multicenter Study of Albuterol Use Among Infants Hospitalized with Bronchiolitis *Condella et al.*

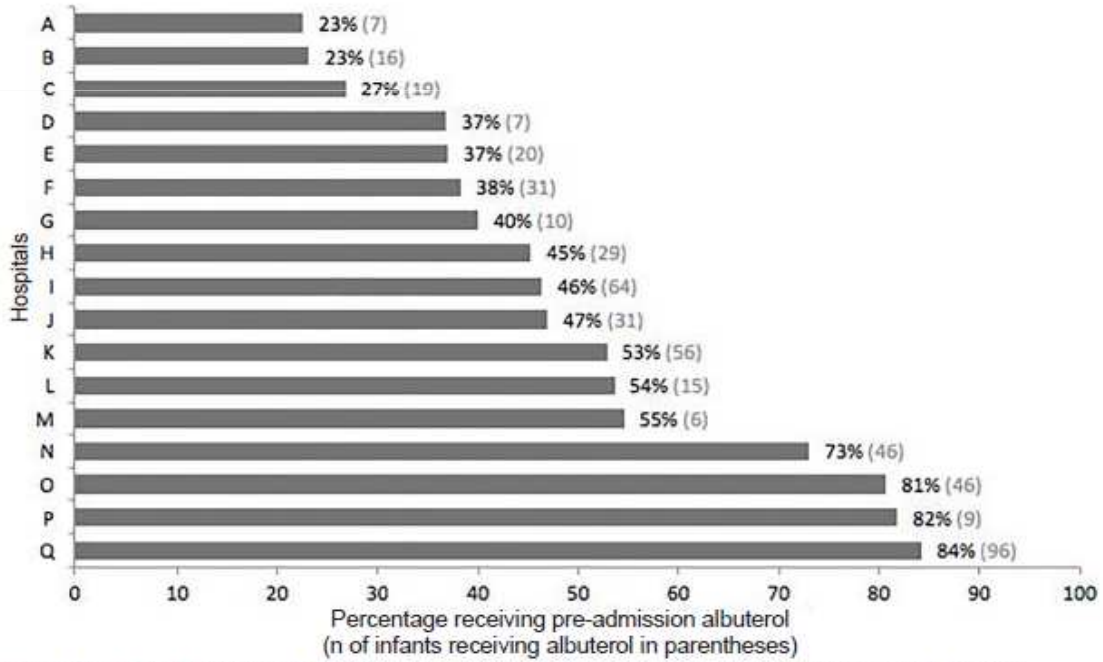

Figure. Pre-admission treatment with inhaled albuterol among infants hospitalized for bronchiolitis, by hospital of enrollment.

J Pediatr (Rio J). 2017;93(s1):75–83

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Jornal de Pediatria

www.jped.com.br

REVIEW ARTICLE

Viral bronchiolitis in young infants: new perspectives for management and treatment☆

Mauricio T. Caballero[a,*], Fernando P. Polack[a], Renato T. Stein[b]

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[b] Pontifícia Universidade Católica de Rio Grande do Sul, Centro INFANT, Porto Alegre, RS, Brazil

2017

ticosteroids and/or inhaled β-agonist and/or epinephrine for the treatment of hospitalized patients with viral bronchiolitis.[8,17,19,21–24] Nevertheless, both the Spanish and Italian guidelines consider that inhaled β-agonists could be tried once at the beginning of treatment, especially if a patient has a personal or family history of atopy, asthma, or eczema.[17,22] Some studies have suggested a potential benefit when epinephrine was used in children in an emergency room setting, lowering the risk of hospital admission.[24] However, the observed clinical impact is very modest, and the patients' length of hospital stay and days on oxygen supplementation were not significantly affected.

Podría haber algún beneficio en atopía, pero no justifica su uso en BQL

- 1) Internación + Oxígeno
- 2) Salbutamol + control ambulatorio en 24 hs
- 3) Solución hipertónica + antitérmicos
- 4) Salbutamol + Ceftriaxona endovenosa

THE COCHRANE COLLABORATION®

Nebulized hypertonic saline solution for acute bronchiolitis in infants (Review)

Current evidence suggests nebulized 3% saline may significantly reduce the length of hospital stay among infants hospitalized with non-severe acute viral bronchiolitis and improve the clinical severity score in both outpatient and inpatient populations.

Zhang L, Mendoza-Sassi RA, Wainwright C, Klassen TP

This is a reprint of a Cochrane review, prepared and maintained by The Cochrane Collaboration and published in *The Cochrane Library* 2011, Issue 3

http://www.thecochranelibrary.com

- ✓ Significativa: ↓ estancia hospitalaria.
- ✓ Mejoría score severidad IN – OUT.

Pediatric Pulmonology 51:418–425 (2016)

A Randomized Trial of Nebulized 3% Hypertonic Saline With Salbutamol in the Treatment of Acute Bronchiolitis in Hospitalized Infants

Pedro Flores, MD, PhD,* Ana Luisa Mendes, MD, and Ana S. Neto, MD, PhD

Summary. Objective: Acute bronchiolitis is a common disorder of infants that often results in hospitalization. Apart from supportive care, no therapy has been shown to influence the course of the

mild-to-moderate acute bronchiolitis showed no significant difference in length of stay in hospital, severity scores, need for supplemental oxygen, tube feeding, or add-on medications. In addition to this lack of apparent benefit of the use of HS, we found increased morbidity (evidenced by higher incidence of cough and rhinorrhoe), which argues against the use of HS in the management of acute bronchiolitis.

- No ↓ LOS
- No ↓ O2 suplementario
- No ↓ score respiratorios

TABLE 5— Adverse Effects Noted in Each Group N(%)

Symptom	Hypertonic saline Group I (HS) N = 33	Normal saline Group II (NS) N = 35	*P* value
Sudden bronchial constriction	2 (6.1)	2 (5.7)	0.952
Apnoe	0	0	
Cyanosis	0	0	
Exacerbation of coughing	15 (45.5)	7 (20.0)	0.025
Excessive rhinorrhoe	19 (57.6)	11 (31.4)	0.030
Saturation dips	0	0	
Tachycardia >200 cpm	0	0	
Agitation	9 (27.3)	12 (34.3)	0.532
Vomiting	0	0	

Pediatric Pulmonology

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Balkan Med J 2016;33:193-7

2016

Comparing the Efficacy of 7%, 3% and 0.9% Saline in Moderate to Severe Bronchiolitis in Infants

Seçil Köse[1], Ahmet Şehriyaroğlu[1], Feyza Esen[1], Ahmet Özdemir[1], Zehra Kardaş[1], Umut Altuğ[1], Esef Karakuş[1], Alper Özcan[1], Ali Fatih Kısaarslan[1], Ferhan Elmalı[2], Yasemin Altuner Torun[1], Mehmet Köse[3]

In this double-blinded prospective trial, the LOS was not significantly different among three groups. In a recent study

	Group A n=35	Group B n=35	Group C n=34	P
Age months Median (min-max)	7.6 (1-18)	7.6 (2-23)	7.7 (1-24)	0.994
Sodium mEq/L Before treatment	n: 29 136.8±2.1	n: 23 137.2±2.9	n: 22 136.8±2.3	0.920
Sodium mEq/L After treatment	n: 21 138.1±2.2	n: 20 138.6±2.1	n: 17 138.0±2.0	0.692
CSS 0	6.97±1.72	7.17±1.90	7.26±1.72	0.778
Heart rate	147.3±13.7	148.7±17.8	152.0±10.9	0.448
LOS hours	72.0 (20-288)	64.0 (12-168)	60.0 (12-264)	0.760
Steroid requirement	16 (45.7%)	16 (45.7%)	22 (64.7%)	0.195

Cochrane Library

Cochrane Database of Systematic Reviews

2017

Nebulised hypertonic saline solution for acute bronchiolitis in infants (Review)

Nebulised hypertonic saline may modestly reduce length of stay among infants hospitalised with acute bronchiolitis and improve clinical severity score. Treatment with nebulised hypertonic saline may also reduce the risk of hospitalisation among outpatients and emergency department patients. However, we assessed the quality of the evidence as low to moderate.

Nebulised hypertonic saline solution for acute bronchiolitis in infants.
Cochrane Database of Systematic Reviews 2017, Issue 12. Art. No.: CD006458.
DOI: 10.1002/14651858.CD006458.pub4.

www.cochranelibrary.com

Reductions in hospital stay were smaller than previously thought. However, an average reduction of 10 hours in the length of hospital stay for infants is significant because bronchiolitis usually has a short duration. Nebulised hypertonic saline appears to be safe and widely available at low cost.

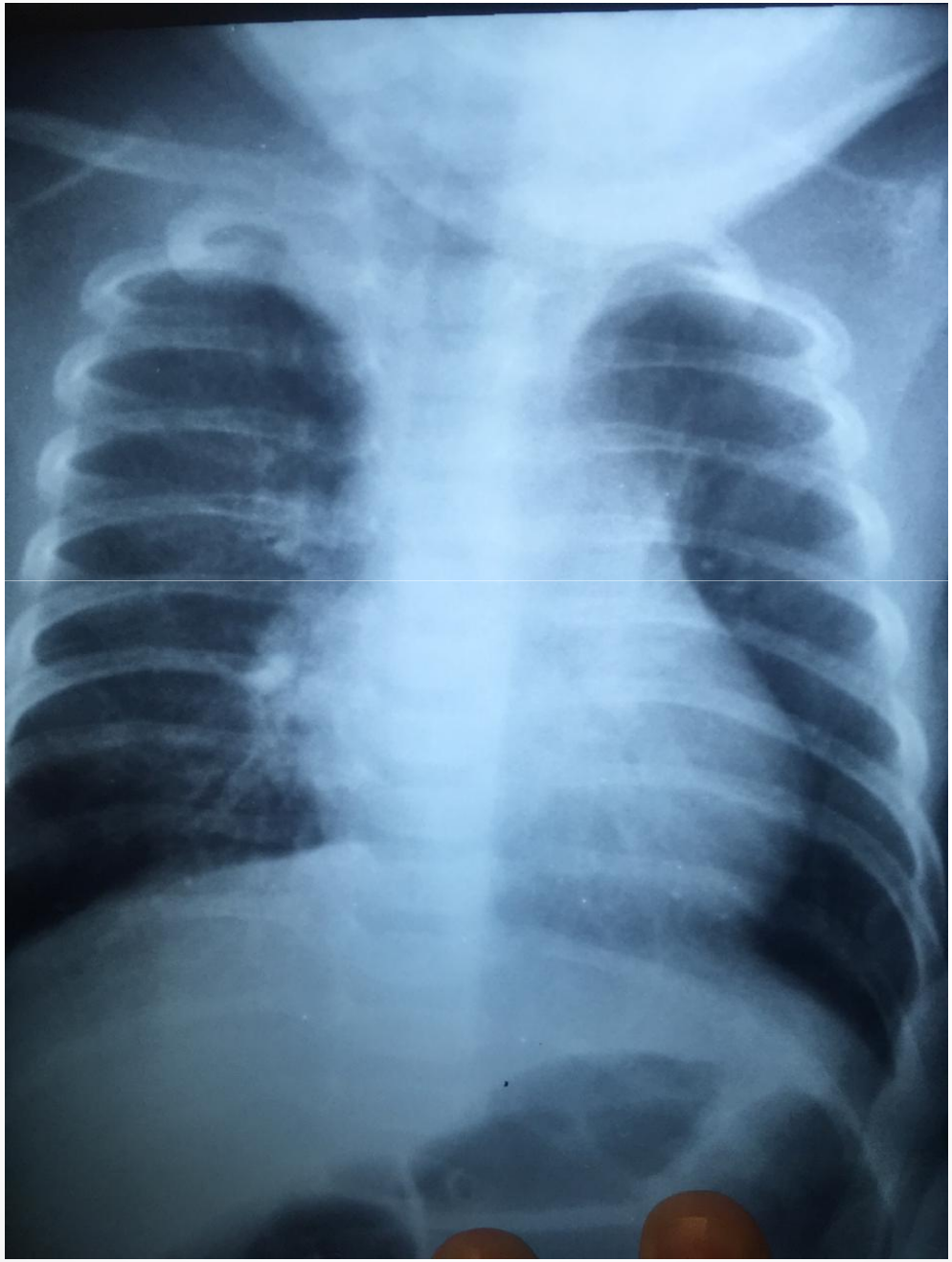
- Modesta ↓ LOS
- Podría ↓ hospitalización

Caso clínico Nº 2

- Paciente de 6 meses de vida, bajo peso 5,24 kg (< P3), que consulta en regular estado general, en un hospital de 2do nivel de complejidad por presentar dificultad respiratoria aguda de tipo obstructiva, sibilancias bibasales, tiraje sub e intercostal, tos productiva, vómitos (intolerancia oral). Oliguria 12 horas

- Signos vitales: Frec. respiratoria 68 x´, taquicardia 154 x´, Tº 38,2. Sat. O2 90% aire ambiental.

- Antec. RNPT 34 SEG / peso nac. 1,78 kg. Internado en neonatología durante 15 días para recuperación nutricional.



Conducta inicial:

1) Internación + Corticoides inhalados
2) Internación + fisioterapia respiratoria + Adrenalina nebulizada
3) Internación + hidratación + OAF a 5 litros/kg/min
4) Internación con OAF 1 L/kg/min + aspiración nasal suave

Diagnóstico: bronquiolitis

1) Internación + Corticoides inhalados
2) Internación + fisioterapia respiratoria + Adrenalina nebulizada
3) Internación + hidratación + OAF a 5 litros/kg/min
4) Internación con OAF 1 L/kg/min + aspiración nasal suave

Conducta inicial:

1) Internación + corticoides inhalados
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4) Internación con OAF 1 L/kg/min + aspiración nasal suave

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Clinical Practice Guideline: The Diagnosis, Management, and Prevention of Bronchiolitis

Shawn L. Ralston, Allan S. Lieberthal, H. Cody Meissner, Brian K. Alverson, Jill E. Baley, Anne M. Gadomski, David W. Johnson, Michael J. Light, Nizar F. Maraqa, Eneida A. Mendonca, Kieran J. Phelan, Joseph J. Zorc, Danette Stanko-Lopp, Mark A. Brown, Ian Nathanson, Elizabeth Rosenblum, Stephen Sayles III and Sinsi Hernandez-Cancio

Pediatrics; originally published online October 27, 2014;
DOI: 10.1542/peds.2014-2742

tive. The most recent Cochrane systematic review shows that corticosteroids do not significantly reduce outpatient admissions when compared with placebo (pooled risk ratio, 0.92; 95% CI, 0.78 to 1.08; and risk ratio, 0.86; 95% CI, 0.7 to 1.06, respectively) and do not reduce LOS for inpatients (MD −0.18 days; 95% CI −0.39 to 0.04).[85] No other comparisons showed relevant differences for either primary or sec-

- No ↓ admisión
- No ↓ LOS

ARTÍCULOS ORIGINALES / ORIGINAL ARTICLES

Neumol Pediatr 2016; 11 (2): 65 - 70

ACTUALIZACIÓN EN EL TRATAMIENTO DE BRONQUIOLITIS AGUDA: MENOS ES MÁS

UPDATE IN THE TREATMENT OF ACUTE BRONCHIOLITIS: LESS IS MORE

Claudia Fuentes S.[1], Guillermo Cornejo C.[2], Raúl Bustos B.[3]

1. Pediatra Especialista en Enfermedades Respiratorias.
Profesor Asistente. Departamento de Pediatría, Facultad de Medicina. Universidad de Concepción. Chile.
2. Médico Residente de Pediatría. Departamento de Pediatría, Facultad de Medicina. Universidad de Concepción. Chile.
3. Medicina Intensiva Pediátrica. Clínica Sanatorio Alemán. Concepción. Chile

La AAP propone que no se debe administrar en niños con bronquiolitis aguda. Fernándes analizó 17 estudios randomizados controlados, con 2596 lactantes, comparando eficacia y seguridad de corticoides sistémicos e inhalados vs placebo u otra intervención, encontrando que no disminuye la admisión hospitalaria tanto en el ámbito ambulatorio como hospitalario (16). Blom evaluó mediante 5 estudios randomizados controlados, con 374 pacientes, el efecto de los corticoides inhalados, iniciados en etapa aguda, para prevenir sibilancias posterior a la bronquiolitis, no encontrando diferencias significativas en relación a prevenir sibilancias y readmisión hospitalaria (17).

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Expert Review of Respiratory Medicine

2018

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Therapeutic strategies for pediatric bronchiolitis

Matti Korppi

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To link to this article: https://doi.org/10.1080/17476348.2019.1554439

To summarize the use of corticosteroids in infants with bronchiolitis, the currently available guidelines do not recommend the use systemic or inhaled steroid. Although there may be a subgroup of patients who could benefit from corticosteroids, the effect is slow and demands repeated systemic doses with a potential risk of adverse effects. In addition, the identification such a subgroup is not possible during bronchiolitis hospitalization. Thus, t
change the current recommendation not to give corticosteroids to infants wi

- No disminuyen el ingreso hospitalario
- No disminuyen los días de internación

Conducta inicial:

1) Internación + Corticoides inhalados
2) Internación + fisioterapia respiratoria + Adrenalina nebulizada
3) Internación + hidratación + OAF a 5 litros/kg/min
4) Internación con OAF 1 L/kg/min + aspiración nasal suave

Effectiveness of Chest Physiotherapy in Infants Hospitalized with Acute Bronchiolitis: A Multicenter, Randomized, Controlled Trial

Vincent Gajdos[1,2,3]*, Sandrine Katsahian[4,5], Nicole Beydon[6], Véronique Abadie[7,8], Loïc de Pontual[9,10], Sophie Larrar[3,11], Ralph Epaud[12,13], Bertrand Chevallier[14,15], Sylvain Bailleux[1], Alix Mollet-Boudjemline[1], Jean Bouyer[2,3], Sylvie Chevret[4,5], Philippe Labrune[1,3]

1 Assistance Publique – Hôpitaux de Paris (APHP), Pediatric Department, Hôpital Antoine Béclère, Clamart, France, **2** Inserm, CESP Centre for Research in Epidemiology and Population Health, U1018, Reproduction and Child Development Team, Villejuif, France, **3** Université Paris Sud 11, Paris, France, **4** APHP, Biostatistic Department, Hôpital Saint Louis, Paris, France, **5** Inserm UMRS U717, Paris, France, **6** APHP, Pulmonology Unit, Pediatric Department, Robert Debré Hospital, Paris, France, **7** Pediatric Department, Hôpital Necker Enfants Malades, Paris, France, **8** Université Paris 5, Paris, France, **9** APHP, Pediatric Department, Hôpital Jean Verdier, Bondy, France, **10** Université Paris Nord, Bobigny, France, **11** APHP, Pediatric Emergency Department, Necker Enfants Malades, Paris, France, **12** APHP, Pediatric Department, Hôpital Armand Trousseau, Paris, France, **13** Université Paris 6, Paris, France, **14** APHP, Pediatric Department, Hôpital Ambroise Paré, Boulogne, France, **15** Université Versailles, Saint Quentin en Yvelines, France

Background: Acute bronchiolitis treatment in children and infants is largely supportive, but chest physiotherapy is routinely performed in some countries. In France, national guidelines recommend a specific type of physiotherapy combining the increased exhalation technique (IET) and assisted cough (AC). Our objective was to evaluate the efficacy of chest physiotherapy (IET + AC) in previously healthy infants hospitalized for a first episode of acute bronchiolitis.

Methods and Findings: We conducted a multicenter, randomized, outcome assessor-blind and parent-blind trial in seven French pediatric departments. We recruited 496 infants hospitalized for first-episode acute bronchiolitis between October 2004 and January 2008. Patients were randomly allocated to receive from physiotherapists three times a day, either IET + AC (intervention group, $n = 246$) or nasal suction (NS, control group, $n = 250$). Only physiotherapists were aware of the allocation group of the infant. The primary outcome was time to recovery, defined as 8 hours without oxygen supplementation associated with minimal or no chest recession, and ingesting more than two-thirds of daily food requirements. Secondary outcomes were intensive care unit admissions, artificial ventilation, antibiotic treatment, description of side effects during procedures, and parental perception of comfort. Statistical analysis was performed on an intent-to-treat basis. Median time to recovery was 2.31 days, (95% confidence interval [CI] 1.97–2.73) for the control group and 2.02 days (95% CI 1.96–2.34) for the intervention group, indicating no significant effect of physiotherapy (hazard ratio [HR] = 1.09, 95% CI 0.91–1.31, $p = 0.33$). No treatment by age interaction was found ($p = 0.97$). Frequency of vomiting and transient respiratory destabilization was higher in the IET + AC group during the procedure (relative risk [RR] = 10.2, 95% CI 1.3–78.8, $p = 0.005$ and RR = 5.4, 95% CI 1.6–18.4, $p = 0.002$, respectively). No difference between groups in bradycardia with or without desaturation (RR = 1.0, 95% CI 0.2–5.0, $p = 1.00$ and RR = 3.6, 95% CI 0.7–16.9, $p = 0.10$, respectively) was found during the procedure. Parents reported that the procedure was more arduous in the group treated with IET (mean difference = 0.88, 95% CI 0.33–1.44, $p = 0.002$), whereas there was no difference regarding the assessment of the child's comfort between both groups (mean difference = −0.07, 95% CI −0.53 to 0.38, $p = 0.40$). No evidence of differences between groups in intensive care admission (RR = 0.7, 95% CI 0.3–1.8, $p = 0.62$), ventilatory support (RR = 2.5, 95% CI 0.5–13.0, $p = 0.29$), and antibiotic treatment (RR = 1.0, 95% CI 0.7–1.3, $p = 1.00$) was observed.

Conclusions: IET + AC had no significant effect on time to recovery in this group of hospitalized infants with bronchiolitis. Additional studies are required to explore the effect of chest physiotherapy on ambulatory populations and for infants without a history of atopy.

2004 – 2008
Francia
7 Hospitales
496 pacientes

No:
- ✓ cambios en severidad de BQL
- ✓ cambios en parámetros respiratorios
- ✓ cambios en requerimientos de oxígeno

NO:
- ✓ Disminuye estancia hospitalaria
- ✓ Disminuye ingreso en UCI
- ✓ Disminuye ingreso en ARM

Population	NS	IET + AC	HR [95% CI] of recovery	*p*-Value*
	Median time to recovery, d [95% CI]			
Overall (*n* = 496)	2.31 [1.97–2.73]	2.02 [1.96–2.34]	1.09 [0.91–1.31]	0.33
<2 mo (*n* = 238)	2.64 [2.25–3.08]	2.47 [1.98–3.31]	1.09 [0.84–1.41]	0.51
≥2 mo (*n* = 258)	2.01 [1.65–2.44]	2.00 [1.51–2.25]	1.09 [0.85–1.40]	0.48

Secondary Outcome	NS (*n* = 250)	IET + AC (*n* = 246)	Relative Risk [95% CI]	*p*-Value [a]
PICU admission, *n* (%)	10 (4.1%)	7 (2.9%)	0.7 [0.3–1.8]	0.62
Ventilation, *n* (%)	2 (0.8%)	5 (2.0%)	2.5 [0.5–13.0]	0.29
Antibiotics	69 (28.5%)	67 (28.6%)	1.0 [0.7–1.3]	1.0
Relapse	53/182 (29.1%)	53/171 (31.0%)	1.1 [0.8–1.5]	0.73
New hospitalization	12/182 (6.6%)	14/171 (8.2%)	1.2 [0.6–2.6]	0.68

Side Effect	NS (*n* = 250)	IET + AC (*n* = 246)	Relative Risk [95% CI]	*p*-Value[a]
Bradycardia with desaturation, *n* (%)	3 (1.2%)	3 (1.2%)	1.0 [0.2–5.0]	1.00
Bradycardia without desaturation, *n* (%)	2 (0.8%)	7 (2.8%)	3.6 [0.7–16.9]	0.10
Vomiting during procedure	1 (0.4%)	10 (4.1%)	10.2 [1.3–78.8]	0.005
Respiratory destabilization	3 (1.2%)	16 (6.5%)	5.4 [1.6–18.4]	0.002
Hypotonia	0 (0.0%)	2 (0.8%)	NA	0.24

2016

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

This review included 12 trials and 1249 participants exploring the efficacy of three physiotherapy modalities (vibration and percussion, slow passive expiratory techniques and forced passive expiratory techniques), compared to no intervention in hospitalised infants with acute bronchiolitis not on mechanical ventilation.

Conventional chest physical therapy (postural drainage plus percussion and vibration techniques) has not been shown to improve the severity of bronchiolitis and has been associated with adverse events. For these reasons, conventional techniques cannot be not used in clinical practice for patients with bronchiolitis.

Chest physiotherapy using passive flow-oriented expiratory techniques (which includes both forced expiratory techniques and slow flow techniques) has not been shown to improve the severity of bronchiolitis by means of clinical scores, nor to reduce time to recovery or length of stay in hospitalised patients. 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. For these reasons, there are no argument in favour of routine use of these techniques as standard clinical practice for hospitalised patients with severe bronchiolitis.

Roqué i Figuls M, Giné-Garriga M, Granados Rugeles C, Perrotta C, Vilaró J.
Chest physiotherapy for acute bronchiolitis in paediatric patients between 0 and 24 months old.
Cochrane Database of Systematic Reviews 2016, Issue 2. Art. No.: CD004873.
DOI: 10.1002/14651858.CD004873.pub5.

www.cochranelibrary.com

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

NO:

- ✓ cambios en severidad de BQL
- ✓ cambios en parámetros respiratorios
- ✓ cambios en estancia hospitalaria
- ✓ cambios en requerimientos de oxígeno

No Kinesioterapia en forma rutinaria

Conducta inicial:

1) Internación + Corticoides inhalados
2) Internación + fisioterapia respiratoria + Adrenalina nebulizada
3) Internación + hidratación + OAF a 5 litros/kg/min
4) Internación con OAF 1 L/kg/min + aspiración nasal suave

The NEW ENGLAND JOURNAL of MEDICINE

N ENGL J MED 368;24 NEJM.ORG JUNE 13, 2013

ORIGINAL ARTICLE

Racemic Adrenaline and Inhalation Strategies in Acute Bronchiolitis

Håvard Ove Skjerven, M.D., Jon Olav Gjengstø Hunderi, M.D., Sabine Kristin Brügmann-Pieper, M.D., Anne Charlotte Brun, M.D., Hanne Engen, M.D., Leif Eskedal, M.D., Ph.D., Marius Haavaldsen, M.D., Bente Kvenshagen, M.D., Ph.D., Jon Lunde, M.D., Leif Bjarte Rolfsjord, M.D., Christian Siva, M.D., Truls Vikin, M.D., Petter Mowinckel, M.Sc., Kai-Håkon Carlsen, M.D., Ph.D., and Karin C. Lødrup Carlsen, M.D., Ph.D.

- ✓ No disminuye la estancia hospitalaria

The lack of effect of inhaled racemic adrenaline on length of hospital stay confirms similar findings on length of stay for albuterol and saline[21] and for albuterol alone.[22] There was a

Table 2. Length of Stay and Use of Supportive Therapy According to Medication and Inhalation Strategy.

Variable	Inhaled Racemic Adrenaline (N=203)	Inhaled Saline (N=201)	Difference or Rate Ratio (95% CI)*	P Value	On Demand (N=200)	Fixed Schedule (N=204)	Difference or Rate Ratio (95% CI)*	P Value
Length of stay — hr†								
Mean	78.7	81.8			73.9	86.5		
Oxygen	83/192 (43.2)	83/189 (43.9)	0.98 (0.78 to 1.24)		72/188 (38.3)	94/193 (48.7)	0.79 (0.62 to 0.99)	0.04
Nasogastric-tube feeding	57/201 (28.4)	59/199 (29.6)	0.96 (0.70 to 1.30)		52/198 (26.3)	64/202 (31.7)	0.83 (0.61 to 1.13)	
Ventilatory support	15/203 (7.4)	15/201 (7.5)	0.99 (0.50 to 1.97)		8/200 (4.0)	22/204 (10.8)	0.37 (0.17 to 0.81)	0.01
Discontinued treatment — no./	36/203 (17.7)	47/201 (23.4)	0.76 (0.52 to 1.12)		37/200 (18.5)	46/204 (22.5)	0.82 (0.56 to 1.21)	

Original Article VOL. 14 | NO. 1 | ISSUE 53 | JAN-MAR 2016

Comparison of Initial Response of Nebulized Salbutamol and Adrenaline in Infants and young Children Admitted with Acute Bronchiolitis.

Adhikari S,[1] Thapa P,[2] Rao KS,[1] BK G[1]

Article *in* Kathmandu University Medical Journal · January 2016

Patients of acute bronchiolitis nebulized with either salbutamol or adrenaline experienced similar decline in RDAI scores in the first 48 hours. Duration of

- ✓ No disminuye LOS
- ✓ Insuficiente evidencia

Bronchiolitis: Recommendations for diagnosis, monitoring and management of children one to 24 months of age

Canadian Paediatric Society

Jeremy N Friedman, Michael J Rieder, Jennifer M Walt

Paediatr Child Health Vol 19 No 9 November 2014

dous

ate. A systematic review of 19 studies evaluating the use of epinephrine in bronchiolitis shows no effect on length of hospital stay(36) and there is insufficient evidence to support its routine use in admitted patients.

Conducta inicial:

1) Internación + Corticoides inhalados
2) Internación + fisioterapia respiratoria + Adrenalina nebulizada
3) Internación + hidratación + OAF a 5 litros/kg/min
4) Internación con OAF 1 L/kg/min + aspiración nasal suave

Alto Flujo

Es una modalidad ventilatoria que consiste en aportar un flujo de oxígeno por encima del flujo pico inspiratorio del niño, a través de una cánula nasal.

Ventajas:

- No invasivo- bajo costo
- Humedad y temperatura adecuada de vía aérea
- Administrar altas concentraciones de flujo
- Fácil de usar
- Mejor tolerancia que CPAP
- Se mantiene el vinculo madre e hijo
- Permite alimentarse y hablar

The NEW ENGLAND JOURNAL of MEDICINE

2018

ORIGINAL ARTICLE

A Randomized Trial of High-Flow Oxygen Therapy in Infants with Bronchiolitis

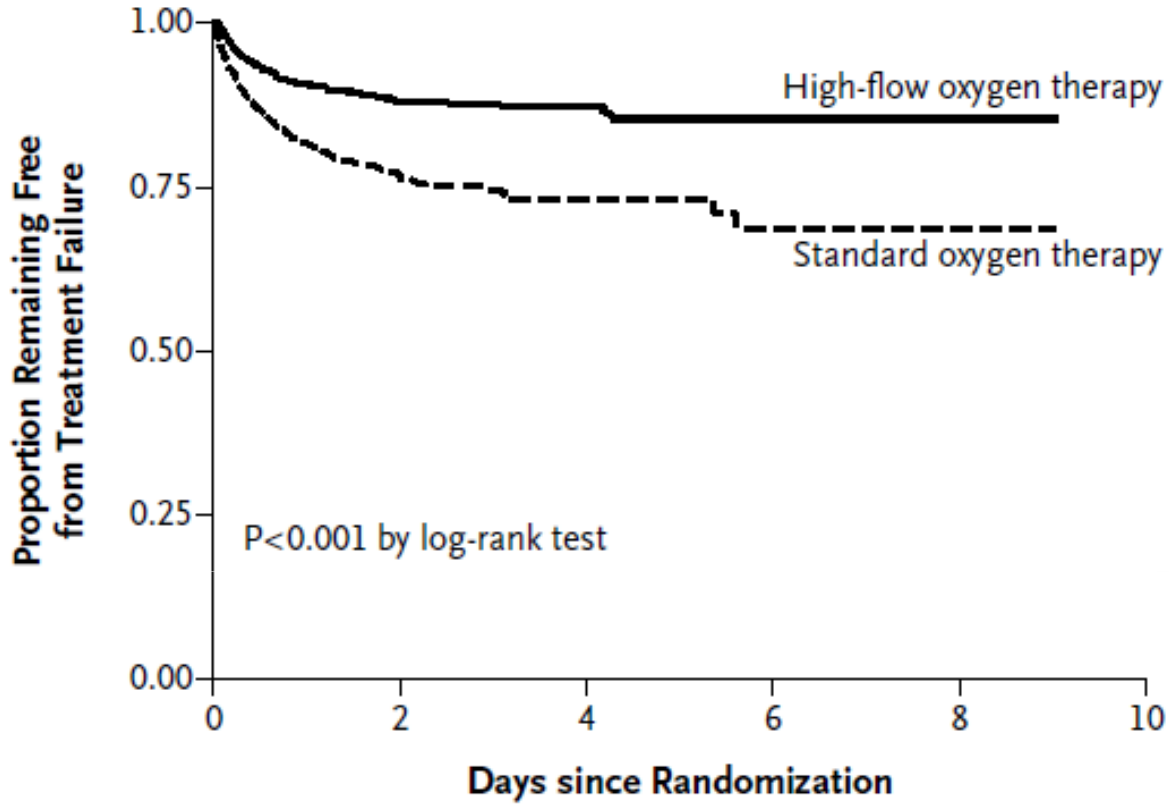
Donna Franklin, B.N., M.B.A., Franz E. Babl, M.D., M.P.H.,
Luregn J. Schlapbach, M.D., Ed Oakley, M.B., B.S.,
Simon Craig, M.B., B.S., M.H.P.E., M.P.H., Jocelyn Neutze, M.B., Ch.B.,
Jeremy Furyk, M.B., B.S., M.P.H.&T.M., John F. Fraser, M.B., Ch.B., Ph.D.,
Mark Jones, Ph.D., Jennifer A. Whitty, B.Pharm., Grad.Dip.Clin.Pharm., Ph.D.,
Stuart R. Dalziel, M.B., Ch.B., Ph.D., and Andreas Schibler, M.D.

N Engl J Med 2018;378:1121-31.

RESULTS

The analyses included 1472 patients. The percentage of infants receiving escalation of care was 12% (87 of 739 infants) in the high-flow group, as compared with 23% (167 of 733) in the standard-therapy group (risk difference, –11 percentage points; 95% confidence interval, –15 to –7; P<0.001). No significant differences were observed in the duration of hospital stay or the duration of oxygen therapy. In each group, one case of pneumothorax (<1% of infants) occurred. Among the 167 infants in the standard-therapy group who had treatment failure, 102 (61%) had a response to high-flow rescue therapy.

OAF tienen la mitad de posibilidades de requerir ARM / VNI



No. at Risk

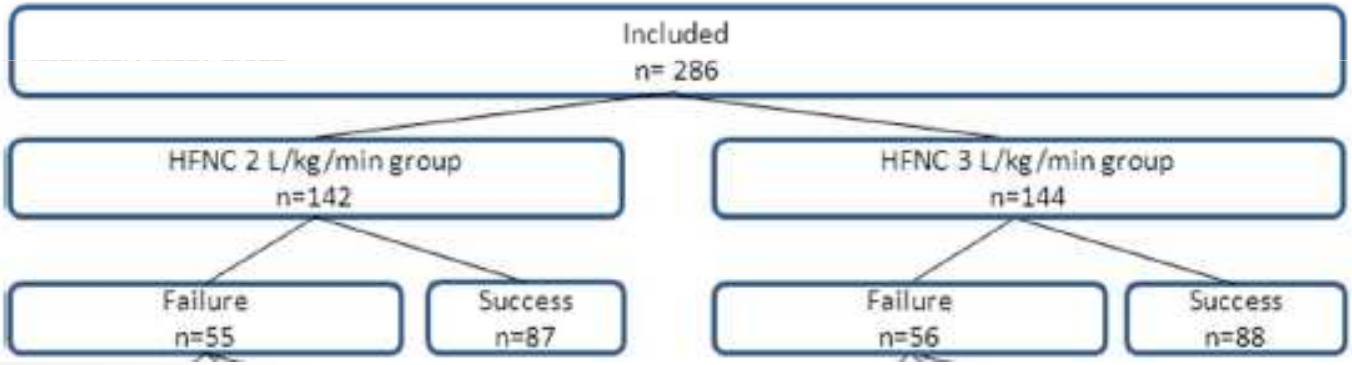
High-flow oxygen	739	382	115	25	14	6
Standard oxygen	733	264	74	21	7	4

Figure 2. Kaplan–Meier Plot of the Proportion of Infants with Bronchiolitis Remaining Free from Treatment Failure.

A multicenter randomized controlled trial of a 3-L/kg/min versus 2-L/kg/min high-flow nasal cannula flow rate in young infants with severe viral bronchiolitis (TRAMONTANE 2)

2018

Christophe Milési[1], Anne-Florence Pierre[2], Anna Deho[3], Robin Pouyau[4], Jean-Michel Liet[5], Camille Guillot[6], Anne-Sophie Guilbert[7], Jérôme Rambaud[8], Astrid Millet[9], Mickael Afanetti[10], Julie Guichoux[11], Mathieu Genuini[12], Thierry Mansir[13], Jean Bergounioux[14], Fabrice Michel[15], Marie-Odile Marcoux[16], Julien Baleine[1], Sabine Durand[1], Philippe Durand[2], Stéphane Dauger[3], Etienne Javouhey[4], Stéphane Leteurtre[6],



This study is the first randomized, prospective, and multicenter comparison of two HFNC flow rates to support young infants with AVB. Contrary to our hypothesis, the use of the 3-L/kg/min flow rate did not reduce the risk of primary treatment failure compared with the reference flow rate of 2 L/kg/min. In addition, the 3-L/kg/min flow rate was more frequently a source of discomfort and possibly prolonged the length of stay in the PICU. Failures

- ✓ No diferencias en falla primaria
- ✓ Mayor disconfort a 3 l/kg/min
- ✓ Mayor probabilidad de prolongar estadía en UTI

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DOI: 10.1002/ppul.24318

ORIGINAL ARTICLE: INFECTION AND IMMUNITY

WILEY

2019
160 pacientes

Comparison of heated humidified high-flow nasal cannula flow rates (1-L·kg·min^{-1} vs 2-L·kg·min^{-1}) in the management of acute bronchiolitis

Department of Pediatrics, Division of Emergency Medicine, School of Medicine, Ege University, Izmir, Turkey

Ali Yurtseven MD | Caner Turan MD | Eren Erseven MD | Eylem Ulas Saz MD

distress due to SB. The use of the 2-L·kg·min^{-1} flow rate did not reduce the risk of treatment failure compared with the flow rate of 1 L·kg·min^{-1}. No marked difference was found in the rate of intubation and ICU admission between the two groups. At the 2nd hour of the therapy, the 1-L·kg·min^{-1} flow rate was significantly more efficient in the rate of weaning, the CRS, RR, HR, and SpO_2 than in the 2-L·kg·min^{-1} flow rate.

	HFNC 1 L·kg·min^{-1} (n = 88)	HFNC 2 L·kg·min^{-1} (n = 80)	*P*-value	Hazard ratio or mean difference
Therapy failure	10 (11.4)	8 (10)	0.775	1.01 (0.74–1.39)
ICU[a] transfer	14 (15.9)	14 (17.5)	0.782	0.98 (0.70-1.36)
Intubation	6 (6.8)	7 (8.8)	0.640	0.97 (0.71-1.34)
At the 2nd hour of HFNC therapy				
Weaning[b]	47 (53.4)	28 (35)	0.017	1.39 (0.92-2.10)
Reduction in RCS[c]	−2.1 (−2.3 to −1.8)	−1.5 (−1.7 to −1.2)	<0.001	−0.6 (−0.2 to −0.9)
Reduction in RR[d]	−15.2 (−17.4 to −13)	−11.8 (−13.9 to −9.7)	<0.001	−3.4 (−6.4 to −0.4)
Reduction in HR[e]	−24.8 (−28.1 to −21.4)	−21.2 (−25 to −17.3)	<0.001	−3.6 (−1.5 to 8.7)
Rise in SpO_2	4.8 (3.9-5.7)	3.6 (2.4-4.8)	<0.001	1.2 (−0.2 to 2.6)

- ✓ 2 l/kg/min no es mejor
- ✓ 2 l/kg/min > disconfort

Cochrane Library

Cochrane Database of Systematic Reviews

High-flow nasal cannula therapy for infants with bronchiolitis (Review)

2018

Beggs S, Wong ZH, Kaul S, Ogden KJ, Walters JAE

High-flow nasal cannula therapy for children with bronchiolitis: a systematic review and meta-analysis

Jilei Lin,[1,2] Yin Zhang,[1,2] Limei Xiong,[1,2] Sha Liu,[1] Caihui Gong,[1] Jihong Dai[1,2]

- ✓ Limitada evidencia en efectividad y seguridad

Implications for practice

At this point in time there is insufficient evidence of the e ness of HFNC therapy for bronchiolitis in infants. While therapy appears a safe and feasible therapy in infants with ately severe bronchiolitis in the one included trial in this the strength of the evidence for the outcomes that were was low and there were no data on important outcomes, in the need for intensive respiratory support.

- High-flow nasal cannula (HFNC) has been paid attention to in treatment of bronchiolitis increasingly, but there is limited evidence on its effects and safety.
- Observational studies indicated that HFNC may be more comfortable, less invasive and potentially has lower costs and fewer adverse events compared with standard oxygen therapy.

Conclusión

Bronquiolitis

NO
- ✓ Salbutamol
- ✓ Solución hipertónica
- ✓ Corticoides
- ✓ Adrenalina
- ✓ kinesioterapia de manera rutinaria

Quizás
- ✓ OAF
- ✓ Aspiración nasal suave

Si
- ✓ Oxígeno
- ✓ Hidratación
- ✓ Alimentación

Gracias