

Clinical Reference Sheet



Adults

Aerogen®

Pioneering Aerosol Drug Delivery

	KEY BENEFITS	STUDY TYPE	AUTHOR	REFERENCE	LINK TO ABSTRACT
MECHANICAL VENTILATION	<ul style="list-style-type: none"> ▶ Aerogen Solo outperforms jet nebulisers when positioned 15cm from the wye ▶ In the absence of bias flow placement at the Wye provides optimal dose 	Bench	Ari et al. 2010	Ari A, Areabi H and Fink JB. Evaluation of aerosol generator devices at 3 locations in humidified and non-humidified circuits during adult mechanical ventilation. <i>Respiratory care</i> . 2010;55:837-44.	↗
	<ul style="list-style-type: none"> ▶ Aerogen Solo outperforms jet nebulisers when positioned at the humidifier ▶ In the presence of bias flow placement at the humidifier provides optimal dose 	Bench	Ari et al. 2010	Ari A, Atalay OT, Harwood R, Sheard MM, Aljamhan EA and Fink JB. Influence of nebulizer type, position, and bias flow on aerosol drug delivery in simulated pediatric and adult lung models during mechanical ventilation. <i>Respiratory care</i> . 2010;55:845-51.	↗
	<ul style="list-style-type: none"> ▶ Change to ipratropium-albuterol nebulisation with Aerogen Solo solution from MDIs resulted in a three-month savings of \$99,359 in drug cost and an extrapolated full-year savings of \$397,436 	Cost Savings	Loborec et al. 2016	Loborec SM, Johnson SE and Keating EA. Financial effect of converting ipratropium-albuterol therapy from inhalers to nebulizer treatments at an academic health system. <i>American journal of health-system pharmacy : AJHP : official journal of the American Society of Health-System Pharmacists</i> . 2016;73:121-5.	↗
	<ul style="list-style-type: none"> ▶ Volume controlled ventilation was associated with higher lung deposition of nebulised particles as compared to pressure support ventilation ▶ Lung deposition was 10.5 ± 3.0 and 15.1 ± 5.0 % of the nominal dose during pressure support and volume controlled ventilation, respectively ($p < 0.05$) 	In vivo imaging	Dugernier et al. 2016	Dugernier, J., Reychler, G., Wittebole, X., Roeseler, J., Depoortere, V., Sottiaux, T., Michotte, J-B., Vanbever, R. Dugernier, T., Goffette, P., Docquier, M-A., Raftopoulos, Hantson, P., Jamar, F., Laterre, P-F. Aerosol delivery with two ventilation modes during mechanical ventilation: a randomized study. <i>Ann. Intensive Care</i> 2016;6:73	↗
	<ul style="list-style-type: none"> ▶ When aerosol pulmonary deposition with a jet nebuliser was compared in spontaneous breathers and mechanically ventilated patients using lung scintigraphy, it was found that pulmonary deposition in MV patients was only 3% versus 12% in spontaneous breathers, a significant reduction ($p < 0.001$) ▶ Although not a direct comparison, pulmonary aerosol deposition with VMN in MV patients is between 15% and 10% (volume controlled and pressure controlled ventilation respectively) 	Clinical	MacIntyre et al. 1985	MacIntyre NR., Silver RM., Mille CW., Schuler F., Coleman RE. Aerosol delivery in intubated, mechanically ventilated patients. <i>Crit Care Med</i> . 1985;13(2):81-4	↗

/ Discover Better

Email info@aerogen.com

Web aerogen.com

Twitter [@aerogen](https://twitter.com/aerogen)







Distributed in Denmark by

TIMIK
MEDICAL

www.timik.dk

PM295B

	KEY BENEFITS	STUDY TYPE	AUTHOR	REFERENCE	LINK TO ABSTRACT
NIV	<ul style="list-style-type: none"> During single limb NIV, higher drug delivery was observed when Aerogen was placed on the patient side of the exhalation valve vs placement ventilator side of the exhalation valve Aerogen deposited more than 2 fold more drug vs the jet nebuliser at both positions 	Bench	Abdelrahim et al. 2010	Abdelrahim ME, Plant P and Chrystyn H. In-vitro characterisation of the nebulised dose during non-invasive ventilation. The Journal of pharmacy and pharmacology. 2010;62:966-72.	↗
	<ul style="list-style-type: none"> Aerogen aerosol delivery provided a higher aerosol dose in a shorter period of time compared to a jet nebuliser 	Bench	McPeck et al. 2012	McPeck M. Improved Aerosol Drug Delivery with an Electronic Mesh Nebulizer during Non-invasive Ventilation AARC poster. 2012.	↗
	<ul style="list-style-type: none"> During single limb NIV higher drug delivery was observed when Aerogen was placed on the patient side of the leak port compared to a jet nebuliser and MDI Very poor drug delivery was observed with an MDI 	Bench	Wang et al. 2016	Wang H, McCormack MT, Elder CS, Church D, Turner JF and Dhand R. Comparison of Aerosol Delivery During Simulated Adult Noninvasive Positive Pressure Ventilation: Nebulizer versus Pressurized Metered-dose Inhaler. Poster Presentation at ATS 2016.	↗
	<ul style="list-style-type: none"> Aerogen delivered more than three times the amount of radiolabelled drug into the respiratory tract vs the jet nebuliser during NIV (5.5% for VMN and 1.5% for jet nebuliser) 	In vivo imaging	Galindo-Filho et al. 2015	Galindo-Filho VC, Ramos ME, Rattes CS, Barbosa AK, Brandao DC, Brandao SC, Fink JB and de Andrade AD. Radioaerosol Pulmonary Deposition Using Mesh and Jet Nebulizers During Noninvasive Ventilation in Healthy Subjects. Respiratory care. 2015;60:1238-46.	↗
	<ul style="list-style-type: none"> VMN was the most efficient aerosol generator compared to the jet nebuliser and pMDI with the lowest residual volume The oro-nasal mask with the Aerogen Solo provided the highest drug deposition and may be considered as a first option for aerosol therapy during NIV 	Bench	AlQuaimi et al. 2017	AlQuaimi MM, Fink JB and Ari A. Efficiency of Different Aerosol Devices and Masks during Noninvasive Positive Pressure Ventilation in a Simulated Adult Lung Model. Journal of Respiratory Medicine and Lung Disease. 2017;2:1-5.	↗
	<ul style="list-style-type: none"> Borg dyspnea score improvement was significantly greater with Aerogen Solo (5.9 to 4.1) than jet nebuliser (6.2 to 5.2) after 4 hours Improvement in respiratory rate was significantly greater with Aerogen Solo at 4 hours Changes in PFTs, SpO2, PaO2 and PaCO2 parameters from baseline to 4 hours were greater with VMN than jet nebuliser, especially FVC (110ml vs 400ml) 	Clinical	Avdeev et al. 2017	AVDEEV S, NURALIEVA G, SOE AK and FINK JB. Comparison of response to aerosol drug delivery with mesh and jet nebulizers during non-invasive ventilation (NIV) in acute exacerbation of COPD. Poster at ERS. 2017.	↗

	KEY BENEFITS	STUDY TYPE	AUTHOR	REFERENCE	LINK TO ABSTRACT
HFNC	<ul style="list-style-type: none"> Aerosol can be delivered efficiently through humidified high flow nasal cannula 	Bench	Bhashyam et al. 2008	Bhashyam AR, Wolf MT, Marcinkowski AL, Saville A, Thomas K, Carcillo JA and Corcoran TE. Aerosol delivery through nasal cannulas: an in vitro study. Journal of aerosol medicine and pulmonary drug delivery. 2008;21:181-8.	
	<ul style="list-style-type: none"> Aerogen Solo deposited significantly more drug in the lungs at the lower flow rate of 30 L/min vs 45 L/min and 60 L/min 	Bench	Réminiac et al. 2016	Reminiac F, Vecellio L, Heuze-Vourc'h N, Petitcollin A, Respaud R, Cabrera M, Pennec DL, Diot P and Ehrmann S. Aerosol Therapy in Adults Receiving High Flow Nasal Cannula Oxygen Therapy. Journal of aerosol medicine and pulmonary drug delivery. 2016;29:134-41.	
	<ul style="list-style-type: none"> The lower the flow rate the higher the drug deposition (10 L/min significantly better than 30 or 50 L/min) At 50 L/min inhaled dose was greater with large cannula compared to small and medium for the Flexicare system 	Bench	Pacocha, et al. 2016	Pacocha D, Thayer T, Dailey PA, Gagnon G. Comparison of aerosol delivery with three high flow nasal cannula brands and sizes. Poster presentation at AARC 2016.	
	<ul style="list-style-type: none"> A lung dose of 10.6% is achievable at a flow rate of 10 L/min. Lower flow rates correlate with higher drug deposition 	In vivo imaging	Alcoforado et al. 2016	Alcoforado L, Ari A, De Melo Barcelar J, Brandao SS, Fink JB and Dornelas De Andrade A. Comparison of Aerosol Deposition with Heated and Unheated High Flow Nasal Cannula (HFNC) in Healthy Adults. Poster presentation at ATS. 2016.	
	<ul style="list-style-type: none"> This study demonstrates that aerosol can be delivered using Aerogen Solo and Aerogen Ultra via a mouthpiece during HFNC therapy Increasing supplemental gas flow rates through the Aerogen Ultra to 6 L/min was associated with an increased tracheal dose regardless of HFNC flow rates A 6 L/min supplemental flow rate through the Aerogen Ultra with 10 L/min HFNC rate delivered the largest tracheal dose (c 21%) 	Bench	MacDonnacha et al. 2017	MacDonnacha I, Bennett G, Murphy S, Joyce M, Sweeney L, MacLoughlin R. Assessment of the feasibility of mouthpiece-mediated aerosol delivery during high flow nasal therapy. Conference Paper December 2017.	
	<ul style="list-style-type: none"> Lung deposition was 3.6% (2.1-4.4) and 1% (0.7-2) of the nominal dose with the Aerogen Solo and the jet nebuliser, respectively (p < 0.05) The jet nebuliser showed a higher residual volume in the nebuliser cup than the Aerogen Solo (45% v 2.6%, p < 0.05) 	Clinical	Dugernier et al. 2017	Dugernier J, Hesse M, Jumetz T, Bialais E, Roeseler J, Depoortere V, Michotte J, Wittebole X, Ehrmann S, Laterre P, Jamar F and Reyckler G. Aerosol Delivery with Two Nebulizers Through High-Flow Nasal Cannula: A Randomized Cross-Over Single-Photon Emission Computed Tomography-Computed Tomography Study. J Aerosol Med Pulm Drug Deliv. 2017;30(5):349-358.	

Clinical Reference Sheet



Adults

Aerogen®

Pioneering Aerosol Drug Delivery

	KEY BENEFITS	STUDY TYPE	AUTHOR	REFERENCE	LINK TO ABSTRACT
SPONTANEOUS BREATHING	<ul style="list-style-type: none"> 23% actual lung dose was delivered by the Aerogen Ultra compared to 5% delivered by a jet nebuliser in healthy adult patients 	In vivo imaging	Alcoforado et al. 2015	Alcoforado L, de Melo Barcelar J, Castor Galindo V, Cristina S, Brandão S, Fink J, B. and Dornelas de Andrade A. Analysis of Deposition Radioaerosol Nebulizers Membrane in Healthy Subjects. ISAM poster presentation 2015.	↗
	<ul style="list-style-type: none"> 34% actual lung dose was delivered by Aerogen Ultra compared to 5% delivered by jet nebuliser Aerogen Ultra has minimal residual volume (2.4%) compared to jet nebuliser (62.8%) 	Imaging	Dugernier et al. 2016	Dugernier, J., Hesse, M., Vanbever, R., Depcortere, V., Roseler, J., Michotte, J-B., Laterre, P-F., Jamar, F., Reyckler, G. SPECT-CT Comparison of Lung Deposition using a System combining a Vibrating-mesh Nebulizer with a Valved Holding Chamber and a Conventional Jet Nebulizer: a Randomized Cross-over Study. Pharm Res 2016.	↗
	<ul style="list-style-type: none"> Drug delivery with Aerogen Ultra was superior to a jet nebuliser with the mouthpiece or valved mask in paediatric and adult models More than 30% dose achieved in adult patients with no added flow 	Bench	Ari et al. 2014	Ari A, Dornelas de Andrade A, Sheard M, AlHamad B and Fink JB. Performance Comparisons of Jet and Mesh Nebulizers Using Different Interfaces in Simulated Spontaneously Breathing Adults and Children. Journal of aerosol medicine and pulmonary drug delivery. 2014.	↗
	<ul style="list-style-type: none"> Aerogen Ultra delivers significantly more medication in nearly half the time compared to a jet nebuliser 	Bench	Hickin et al.2014	Hickin S, Mac Loughlin R, Sweeney L, Tatham A and Gidwani S. Comparison of mesh nebuliser versus jet nebuliser in simulated adults with chronic obstructive pulmonary disease. Poster at the College of Emergency Medicine Clinical Excellence Conference. 2014.	↗
	<ul style="list-style-type: none"> Aerogen Solo was more efficient than the jet nebuliser with a tracheostomy model with and without humidification Deposition was lowest with the heated humidifier with high flow 	Bench	Ari et al. 2016	Ari A, Harwood R, Sheard M, Alquaimi MM, Alhamad B and Fink JB. Quantifying Aerosol Delivery in Simulated Spontaneously Breathing Patients With Tracheostomy Using Different Humidification Systems With or Without Exhaled Humidity. Respiratory care. 2016;61:600-6.	↗

/ Discover Better

Email info@aerogen.com

Web aerogen.com

Twitter [@aerogen](https://twitter.com/aerogen)

Distributed in Denmark by



www.timik.dk

PM295B

Clinical Reference Sheet



Adults

Aerogen®

Pioneering Aerosol Drug Delivery

	KEY BENEFITS	STUDY TYPE	AUTHOR	REFERENCE	LINK TO ABSTRACT
SPONTANEOUS BREATHING	<ul style="list-style-type: none"> › 85% of patients achieving symptom control with one 2.5mg salbutamol dose with Aerogen Ultra (47% for jet nebuliser) › 32% reduction in admission rates with the Aerogen Ultra relative to jet nebuliser › 37 min (13%) median reduction in ED length of stay with the Aerogen Ultra relative to jet nebuliser 	Clinical Outcome	Dunne and Shortt. 2017	Dunne RB and Shortt SA. Comparison of bronchodilator administration with vibrating mesh nebulizer and standard jet nebulizer in the emergency department. The American Journal of Emergency Medicine. 2017; In Press, Accepted Manuscript.	
	<ul style="list-style-type: none"> › Compared to jet nebuliser, a single 2.5mg salbutamol dose with Aerogen Ultra significantly improved FVC in patients with COPD exacerbations › Patients felt better when using the Aerogen Ultra as demonstrated by a significant reduction in breathlessness score (not seen with jet nebuliser) 	Clinical Outcome	Cushen et al. 2016	Cushen, V., Alsaid, A., Abdulkareem, A., Costello, R.W. A pilot study to assess bronchodilator response during an acute exacerbation of COPD using a vibrating mesh nebulizer versus jet nebulizer for bronchodilator delivery. Irish Thoracic Society 2016.	
	<ul style="list-style-type: none"> › Nebuliser type and design influences the impact of pathogens containing fluid entering the reservoir through the mouthpiece › Aerosol generated by both Pari and BAN nebulisers was contaminated by pathogens entering the mouthpiece and draining into the open medication reservoir. Fluid entering the mouthpiece of the Aerogen Solo with Aerogen Ultra does not contact the mesh or contaminate the medication reservoir of the nebuliser 	Bench	Dailey and Fink. 2017	Dailey PA, Fink JB. Aerosol Contamination Associated with Simulated "Drooling" Into a Nebulizer Mouthpiece.	
	<ul style="list-style-type: none"> › Aerogen Ultra provides the highest inhaled drug dose in both in vitro and ex vivo models compared to BAN, BEN, MTN and other jet nebs › Significantly lower residual volume (3-7%) with VMN compared to all other nebs including BAN (60%) 	Clinical	Lin et al. 2018	Lin HL, Fang TP, Cho HS, Wan GH, Hsieh MJ, Fink JB. Aerosol delivery during spontaneous breathing with different nebulizers- in vitro/ex vivo models evaluation. Pulmonary Pharmacology & Therapeutics. 2018;48:225-231.	

/ Discover Better

Email info@aerogen.com

Web aerogen.com

Twitter [@aerogen](https://twitter.com/aerogen)

Distributed in Denmark by



www.timik.dk

PM295B

Clinical Reference Sheet



Adults

Aerogen®

Pioneering Aerosol Drug Delivery

PULMONARY FUNCTION TESTING	KEY BENEFITS	STUDY TYPE	AUTHOR	REFERENCE	LINK TO ABSTRACT
	<ul style="list-style-type: none"> › The authors developed a simple, volumetric dosing method for Methacholine Challenge Testing (MCT) with Aerogen Solo which meets the current ERS guidelines › Current commonly used JNs for MCT (Wright & Bennett Twin) are difficult to obtain and Aerogen Solo is a viable and easy to use replacement 	Clinical	Blais et al. 2018	Blais Cm, Cockcroft DW, Veilleux J, Boulay ME, Boulet LP, Gauvreau GM, Scime TX, Watson RM, O'Byrne PM, Davis BE. Methacholine challenge: Comparison of airway responsiveness produced by a vibrating mesh nebulizer versus a jet nebulizer. J Aerosol Med Pulm Drug Deliv. 2018;31(2)88-93.	↗
	<ul style="list-style-type: none"> › Developed a novel, simple, repeatable method for conducting Methacholine challenges using the Aerogen Solo 	Clinical	Davis et al. 2017	Davis BE., Simonson SK., Blais CM., Cockcroft DW. Methacholine Challenge Testing: A Novel Method for Measuring PD20. Chest. 2017;152(6):1251-7.	↗

HFOV	KEY BENEFITS	STUDY TYPE	AUTHOR	REFERENCE	LINK TO ABSTRACT
	<ul style="list-style-type: none"> › Aerogen Solo delivers more drug than jet nebulisers when positioned proximal to the patient (22.7% vs 3%) › Negligible drug is delivered when device positioned distally with any nebuliser 	Bench	Fang et al. 2016	Fang TP, Lin HL, Chiu SH, Wang SH, DiBlasi RM, Tsai YH and Fink JB. Aerosol Delivery Using Jet Nebulizer and Vibrating Mesh Nebulizer During High Frequency Oscillatory Ventilation: An In Vitro Comparison. Journal of aerosol medicine and pulmonary drug delivery. 2016.	↗

/ Discover Better

Email info@aerogen.com

Web aerogen.com

Twitter [@aerogen](https://twitter.com/aerogen)

Distributed in Denmark by



www.timik.dk

PM295B

Clinical Reference Sheet



Aerogen®

Pioneering Aerosol Drug Delivery

	KEY BENEFITS	STUDY TYPE	AUTHOR	REFERENCE	LINK TO ABSTRACT
MECHANICAL VENTILATION	<ul style="list-style-type: none"> › Aerogen Solo delivers 9 times more drug than a jet nebuliser › When using bias flow placement at the humidifier provides optimal dose 	Bench	Berlinski et al. 2013	Berlinski A and Willis JR. Albuterol delivery by 4 different nebulizers placed in 4 different positions in a pediatric ventilator in vitro model. Respiratory care. 2013;58:1124-33.	↗
	<ul style="list-style-type: none"> › During infant ventilation with bias flow, more than twice the medication is delivered when the Aerogen Solo is placed at the wye compared to the humidifier 	Bench	Berlinski and Kumaran. 2016	Berlinski A and Kumaran S. Particle Size Characterization of Nebulized Albuterol Delivered by a Vibrating Mesh Nebulizer Through Pediatric Endotracheal Tubes. Poster Presentation at ATS. 2016.	↗
	<ul style="list-style-type: none"> › Aerosolized albuterol delivered by the Aerogen Solo improved pulmonary mechanics from baseline › Novel strategy to improve lung recruitment in patients with respiratory failure 	Clinical	Ramsi et al. 2015	Ramsi MA, Henry M, Milla CE and Cornfield DN. Inhaled beta2-Agonist Therapy Increases Functional Residual Capacity in Mechanically Ventilated Children With Respiratory Failure. Pediatric critical care medicine. 2015;16:e189-93.	↗

	KEY BENEFITS	STUDY TYPE	AUTHOR	REFERENCE	LINK TO ABSTRACT
HFOV	<ul style="list-style-type: none"> › In HFOV, positioning of the nebuliser proximal to the patient provides greater aerosol delivery with negligible aerosol delivery distally regardless of nebuliser type › Aerogen Solo outperforms jet nebulisers when positioned proximal to the patient › Aerosol dose of 17.4% and 8.6% was observed in paediatric and infant models respectively with Aerogen Solo proximally 	Bench	Fang et al. 2016	Fang TP, Lin HL, Chiu SH, Wang SH, DiBlasi RM, Tsai YH and Fink JB. Aerosol Delivery Using Jet Nebulizer and Vibrating Mesh Nebulizer During High Frequency Oscillatory Ventilation: An In Vitro Comparison. Journal of aerosol medicine and pulmonary drug delivery. 2016 Mar 14. [Epub ahead of print].	↗

/ Discover Better

Email info@aerogen.com

Web aerogen.com

Twitter [@aerogen](https://twitter.com/aerogen)

Distributed in Denmark by



www.timik.dk

PM296B

Clinical Reference Sheet



Aerogen®

Pioneering Aerosol Drug Delivery

	KEY BENEFITS	STUDY TYPE	AUTHOR	REFERENCE	LINK TO ABSTRACT
NIV + HFNC	<ul style="list-style-type: none"> › Aerogen Solo achieved optimal drug delivery via HFNC, SiPAP and bubble CPAP when positioned ventilator side of the humidifier 	Bench	Sunbul et al. 2015	Sunbul FS, Fink JB, Harwood R, Sheard MM, Zimmerman RD and Ari A. Comparison of HFNC, bubble CPAP and SiPAP on aerosol delivery in neonates: An in-vitro study. Pediatric pulmonology. 2015;50:1099-106.	
	<ul style="list-style-type: none"> › Aerogen Solo achieved greater lung deposition via HFNC at the lower flow rate of 3 L/min vs 6 L/min 	Bench	Ari et al. 2011	Ari A, Harwood R, Sheard M, Dailey P and Fink JB. In vitro comparison of heliox and oxygen in aerosol delivery using pediatric high flow nasal cannula. Pediatric pulmonology. 2011;46:795-801.	
	<ul style="list-style-type: none"> › Using Aerogen Solo in line in an infant model provides similar aerosol deposition as standard facemask nebuliser treatment with the added benefit of providing high flow therapy at the same time 	In vivo imaging	Reminiac et al. 2016	Reminiac F, Vecellio L, Loughlin RM, Le Pennec D, Cabrera M, Vourc'h NH, Fink JB and Ehrmann S. Nasal high flow nebulization in infants and toddlers: An in vitro and in vivo scintigraphic study. Pediatric pulmonology. 2016.	
	<ul style="list-style-type: none"> › Aerogen Solo delivered more drug compared to jet nebulisers, regardless of position in the ventilator circuit and was also significantly better than the NIVO 	Bench	Velasco and Berlinski. 2018	Velasco J and Berlinski A. Albuterol Delivery Efficiency in a Pediatric Model of Noninvasive Ventilation With Double-Limb Circuit. Respiratory care. 2018;63:141-146.	
	<ul style="list-style-type: none"> › Aerogen Solo placed at the mask or before the Y-piece of a double-limb circuit provided the highest aerosol delivery efficiency during NIV 				

/ Discover Better

Email info@aerogen.com

Web aerogen.com




Twitter [@aerogen](https://twitter.com/aerogen)

Distributed in Denmark by



www.timik.dk

PM296B

	KEY BENEFITS	STUDY TYPE	AUTHOR	REFERENCE	LINK TO ABSTRACT
SPONTANEOUS BREATHING	<ul style="list-style-type: none"> › Aerogen Ultra drug delivery with mouthpiece or valved mask at 2 L/min was 2 times higher than a jet nebuliser with mouthpiece or mask 	Bench	Ari et al. 2015	Ari A, de Andrade AD, Sheard M, AlHamad B and Fink JB. Performance Comparisons of Jet and Mesh Nebulizers Using Different Interfaces in Simulated Spontaneously Breathing Adults and Children. Journal of aerosol medicine and pulmonary drug delivery. 2015;28:281-9.	
	<ul style="list-style-type: none"> › Anecdotal feedback from clinicians, in addition to improvement in Clinical Asthma Score (CAS) led the authors to hypothesize that patients demonstrate a positive clinical response to aerosol delivery utilizing the Aerogen Solo via HFNC 	Performance Improvement Plan	Dailey et al. 2015	Dailey P, Tina T, Santos J and Gurung P. Performance Improvement Plan for Pediatric Patients in Respiratory Distress: Clinical Experience. Respiratory Therapy. 2015;10:27-29.	
	<ul style="list-style-type: none"> › The Aerogen Solo delivered a greater inhaled mass than a pMDI or jet nebuliser during aerosol delivery via a tracheostomy in a spontaneously breathing paediatric model 	Bench	Alhamad et al. 2015	Alhamad BR, Fink JB, Harwood RJ, Sheard MM and Ari A. Effect of Aerosol Devices and Administration Techniques on Drug Delivery in a Simulated Spontaneously Breathing Pediatric Tracheostomy Model. Respiratory care. 2015;60:1026-32.	
	<ul style="list-style-type: none"> › 85% of patients achieving symptom control with one 2.5mg salbutamol dose vs 47% with jet nebuliser › 32% reduction in admission rates relative to jet nebuliser › 37 min median reduction in ED length of stay vs jet nebuliser 	Clinical Outcome	Dunne and Shortt. 2017	Dunne RB and Shortt SA. Comparison of bronchodilator administration with vibrating mesh nebulizer and standard jet nebulizer in the emergency department. The American Journal of Emergency Medicine. 2017; In Press, Accepted Manuscript. Note: This study involved a mixed patient population of adults and paediatrics.	