Every Patient, Every Setting*

Aerogen is a high performance drug delivery device that can cross multiple modalities for ventilated and non-ventilated patients. By delivering more aerosol than any other device, Aerogen can improve patient outcomes at any phase of the patient's care.

SUPERIOR PATIENT CARE WITH AEROGEN ULTRA

In a comparison study with a jet nebuliser, Aerogen Ultra resulted in:

32%
reduction in ED admission rates [1]

85%
of **patients achieving symptom control** with one 2.5mg salbutamol dose [1]

37min
reduction in ED median length of stay [1]

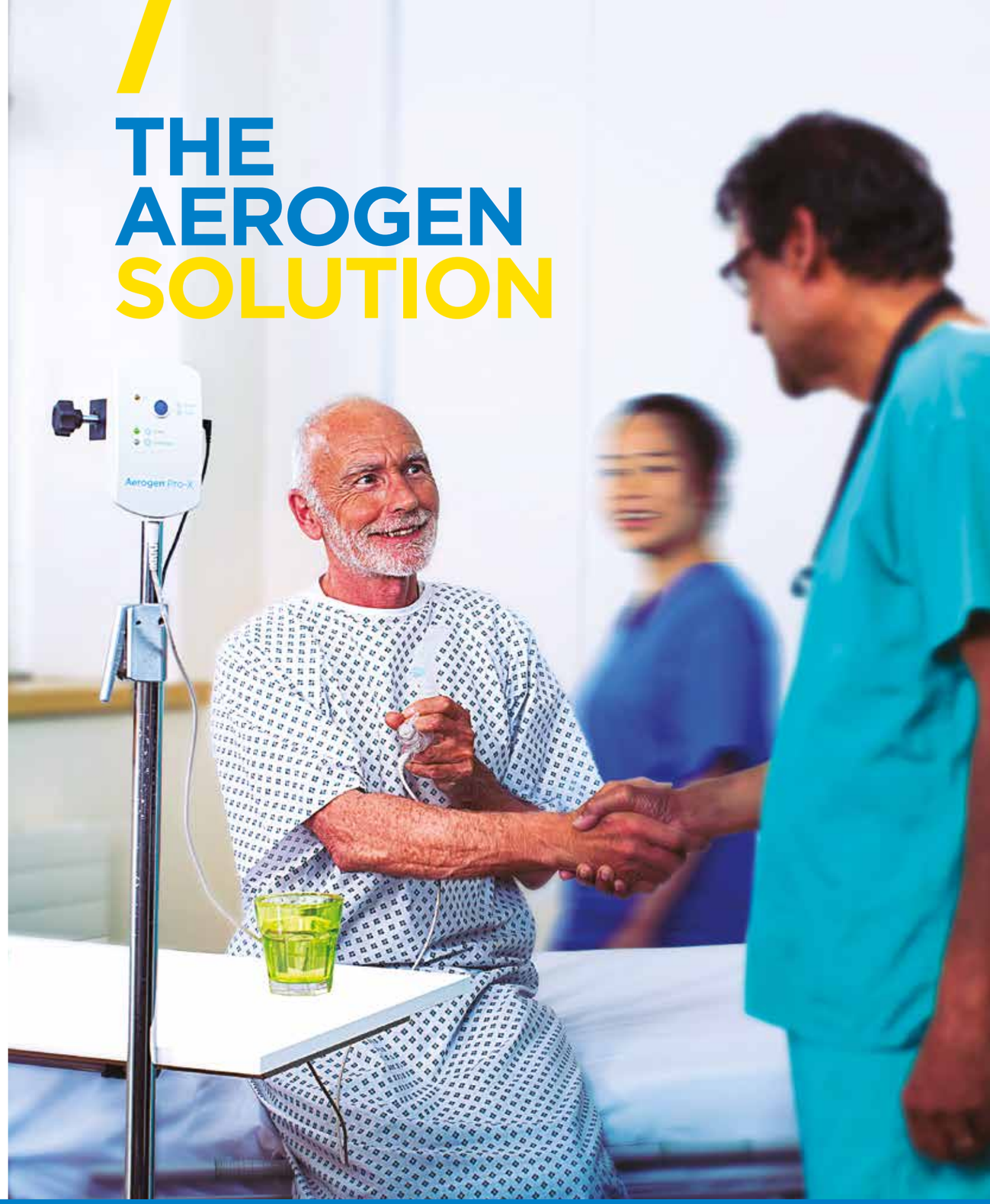
1. Dunne RB and Shortt S. Comparison of bronchodilator administration with vibrating mesh nebulizer and standard jet nebulizer in the emergency department. The American journal of emergency medicine. 2017

Please contact your local distributor for more information

*Please refer to Aerogen Solo Instruction Manual for approved Aerogen set-ups

PM 527 Rev A

THE AEROGEN SOLUTION



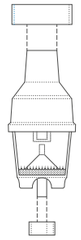
Tel +353 91 540 400
Email discoverbetter@aerogen.com

/ Discover Better
aerogen.com

Aerogen®

Aerogen®
Pioneering Aerosol Drug Delivery

YOUR CHALLENGE



Traditional aerosol delivery methods

Jet nebulisers were invented in 1858 and the same technology is still used today with numerous limitations and implications.[1]

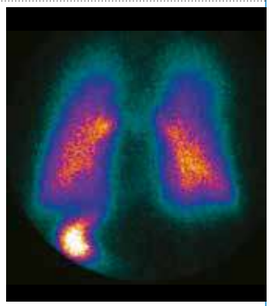
ED & WARDS

- Low delivery of medication to the lungs (5.2%)[2]
- Substantial residual volume (62.3%)[3]
- Multiple back-to-back treatments frequently needed[4]

Pressure on hospital beds due to frequent admissions with respiratory exacerbations

ICU
NIV
HFNC

- Low delivery of medication to the lungs via NIV (1.5%)[5] and HFNC (1%)[6]
- Difficult to use and adds flow which can cause disruption to therapy
- Slow recovery in acute exacerbation COPD with jet nebulisers



ICU
Mechanical Ventilation

- 2.9% medication delivered to the lungs[7]
- Risk of contamination due to:
  - breaking of the circuit[8] (which can also lead to loss of lung recruitment/PEEP)
  - re-nebulising condensate (jet nebuliser sits below the circuit)
- Adds flow

POTENTIAL IMPACT

- ✗ Limited and slower patient response[4, 9]
- ✗ Increased patient length of stay in the ED due to multiple treatments[4]

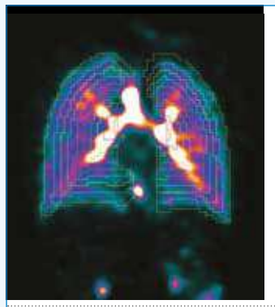
1. Hardluck Asthma. 1856–1858: The first nebulizer. 28 August 2012. http://hardluckasthma.blogspot.co.uk/2012/08/1849-1858-first-nebulizer.html. Accessed 19 May 2016. 2. Dugernier J, Hesse M, Vanbever R, et al. SPECT-CT Comparison of Lung Deposition using a System combining a Vibrating-mesh Nebulizer with a Valved Holding Chamber and a Conventional Jet Nebulizer: a Randomized Cross-over Study. Pharm Res 2017;34:290–300. 3. Lin HL, Fang TP, Cho HS et al. Aerosol delivery during spontaneous breathing with different types of nebulizers- in vitro/ex vivo models evaluation. Pulm Pharmacol Ther. 2018 Feb;48:225-231. 4. Dunne RB and Shortt S. 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. 5. Galindo-Filho VC, Ramos ME, Rattes CS, Barbosa AK, Brandão DC, Brandão SCS, Fink JB and Dornelas de Andrade A. Radioaerosol Pulmonary Deposition Using Mesh and Jet Nebulizers During Noninvasive Ventilation in Healthy Subjects. Respiratory care. 2015;60:1238-1246. 6. Dugernier et Al, Aerosol Delivery with Two Nebulizers Through High-Flow Nasal Cannula: A Randomized Cross-Over Single-Photon Emission Computed Tomography-Computed Tomography Study, Volume 30, Number 0, 2017. 7. MacIntyre NR, Silver RM, Miller CW, Schuler F and Coleman RE. Aerosol delivery in intubated, mechanically ventilated patients. Critical care medicine. 1985;13:81-4. 8. AARC Evidence-based clinical practice guidelines: Care of the ventilator circuit and its relation to ventilator-associated pneumonia. Respiratory Care. 2003; 48(9): 869-87. 9. Cushen B, Alsaid A, Abdulkareem A and Costello RW. A Pilot Study To Assess Bronchodilator Response During An Acute Exacerbation Of COPD Using A Vibrating Mesh Nebuliser Versus Jet Nebuliser For Bronchodilator Delivery. BTS poster presentation. 2016.

OUR SOLUTION

Aerogen High Performance Aerosol Drug Delivery

Studies demonstrate that Aerogen's patented technology silently delivers:

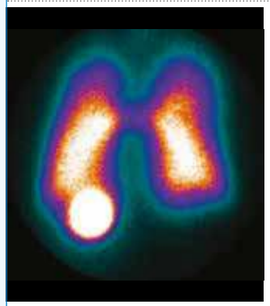
ED & WARDS



- 6x more medication delivered to the lungs (34.1%)[1]
- Minimal residual volume (2.8%)[2]
- Fewer treatments and 37 minute median reduction in patient length of stay[3]
- Significant improvement in FVC and symptom scores in COPD acute exacerbation[4]

Substantial savings can be achieved with Aerogen in the ED based on 37 mins shorter LOS and 30% higher discharge rate[3]

ICU
NIV
HFNC



- 4x more medication delivered to the lungs via NIV (5.5%)[5] and HFNC (3.6%)[6]
- Significant improvement in COPD patients with NIV and Aerogen, BORG score, respiratory rate, SpO2, blood gases[7]
- Easily fits in line with no added flow and does not require interruption of therapy

ICU
Mechanical Ventilation

- 10–15% lung dose during ventilation[8]
- Reduced risk of cross-contamination due to:
  - not breaking the circuit
  - reduction in risk of re-nebulisation of condensate (Aerogen sits above the circuit)
- Easily fits in line with no added flow

RESULT

- ☑ Improved and visible patient response to treatment[3, 4, 7]
- ☑ Delivers significantly more medication in less time[9]
- ☑ Reduced escalation of care may result in reduced costs[3]
- ☑ Delivers more drug to the lungs across all modalities

1. Dugernier J, Hesse M, Vanbever R, et al. 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 2017;34:290–300. 2. Lin HL, Fang TP, Cho HS et al. Aerosol delivery during spontaneous breathing with different types of nebulizers- in vitro/ex vivo models evaluation. Pulm Pharmacol Ther. 2018 Feb;48:225-231. 3. Dunne RB and Shortt S. 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. 4. Cushen B, Alsaid A, Abdulkareem A and Costello RW. A Pilot Study To Assess Bronchodilator Response During An Acute Exacerbation Of COPD Using A Vibrating Mesh Nebuliser Versus Jet Nebuliser For Bronchodilator Delivery. BTS poster presentation. 2016. 5. Galindo-Filho VC, Ramos ME, Rattes CS, et al. Radioaerosol pulmonary deposition using mesh and jet nebulizers during noninvasive ventilation in healthy subjects. Respir Care 2015;60(9):1238–1246. 6. Dugernier et Al, Aerosol Delivery with Two Nebulizers Through High-Flow Nasal Cannula: A Randomized Cross-Over Single-Photon Emission Computed Tomography-Computed Tomography Study, Volume 30, Number 0, 2017. 7. 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. 8. Dugernier J, Reychler G, Wittebole X, et al. Aerosol delivery with two ventilation modes during mechanical ventilation: a randomized study. Ann Intensive Care 2016;6(1):73. 9. 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.