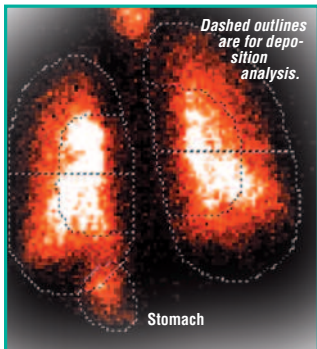


Fast, Assured Delivery.

Gamma Camera
Deposition Images



Breath-Actuated Nebulizer (BAN)



Conventional T Type Nebulizer

* Photo Source: *Predicting Lung Deposition with a Cascade Impactor*, Sangwan S., Hull F., Condos R., Smaldone GC. *Journal of Aerosol Medicine* 2001, 14(3):421.

* Presented at the 13th International Congress on Aerosols in Medicine, Interlaken, Switzerland, September 17-21, 2001.

Performance Validation:

Introduced in January of 2000, the **AeroEclipse®** Breath Actuated Nebulizer's (BAN) performance is well documented, both on the bench and in hospitals with patients. Most abstracts are available at www.monaghanmed.com.

Published, Peer-Reviewed Investigations:

Reduction of Nebulization Time, Number of Treatments and Length of Stay Can Be Achieved with a Breath Actuated Nebulizer (PN 60011)

Simmons, L., Thigpen, K.; AARC (2007) Poster Presentation

Conclusion: "The BAN had a desirable impact on decreasing the time required for nebulization while reducing the number of treatments required for our patients as well as the ALOS (average length of stay) required for hospitalization prior to discharge."

A Randomized Controlled Trial Comparing A Breath-Activated Nebulizer to Standard Intermittent and One-Hour Continuous Albuterol in the Treatment of Emergency Room Pediatric Asthma (PN 76331)

Katie Sabato MS RRT, Priscilla Ward RRT, William Hawk MD, Jeanette Asselin RRT MS.; Children's Hospital and Research Center at Oakland. *Respiratory Care*, November 2005, V50, No11, p.1489.

Conclusion: "We contend that the Monaghan **AeroEclipse®** is a safe and effective nebulizer for the administration of bronchodilator aerosols in pediatrics and may be more effective than continuous aerosols in the treatment of Emergency Room pediatric asthma."

Performance Comparison of Nebulizer Designs: Constant Output, Breath Enhanced, and Dosimetric (PN 76173)

J. L. Rau, A. Ari, R.D. Restrepo; *Respiratory Care*, 2004;49(2): 174-179.

Conclusion: "... traditional constant output, breath-enhanced and dosimetric devices differ significantly in overall drug disposition. The dosimetric **AeroEclipse®** provide the highest inhaled drug mass and lowest loss to ambient."

An In Vitro Study to Investigate the Use of a Breath-Actuated, Small-Volume, Pneumatic Nebulizer for the Delivery of Methacholine Chloride Bronchoprovocation Agent (PN 74069)

J.P. Mitchell, M.W. Nagel, S. Bates, C. Doyle; *Respiratory Care*, January 2003, V48, No1.

Conclusion: "... our measurements indicate that a predictable dose of MC, within the useful range for bronchoprovocation testing, can be delivered to an adult patient breathing tidally."

Comparison of Breath-Actuated Jet Nebulizer (BAN) in Continuous Delivery Mode with Other Continuous Delivery Nebulizers (PN 76162)

J.P. Mitchell, K. Wiersema, C. Dole, M. Nagel; *Respiratory Care*, 2003 48(11), S1077.

Conclusion: "The **AeroEclipse®** nebulizer delivered significantly more FM in continuous delivery mode than the other nebulizers ... "

Lung Deposition and Respirable Mass During Wet Nebulization

S. Sangwan, R. Condos, G. Smaldone; *Journal of Aerosol Medicine*, 2003, V16, No4, p377-384.

Conclusion: "... we have measured FPF2.5mm using low-flow cascade impaction and found that it predicts pulmonary drug delivery in vivo for wet nebulizers. Aerosol was inhaled during tidal breathing. Cascade impaction was determined using a bench protocol that mimicked *in vivo* drug delivery."

Comparison in Rates of Breakthrough Treatments During a Conversion from Racemic Albuterol to Levalbuterol (PN 74189)

R.S. Pikarsky, R. Acevedo, T. Farrell, C. Roman, W. Fascia; *Chest*, 2002,122(4) 146S.

Conclusion: "The conversion to Levalbuterol allows for decreased respiratory therapy time or the re-allocating of workforce needs while maintaining, or improving, quality of aerosol administration, as evidenced by the decrease in breakthrough requirements."

Breath-Actuated Nebulizer Delivers Broncho-Dilator More Efficiently than Conventional Jet Nebulizer in a Simulation of an Adult Tidal-Breathing Patient (PN 76163)

M.W. Nagel and J.P. Mitchell; *American Journal of Respiratory and Critical Care Medicine*, 165(8), A189, 2002.

Conclusion: "Dose delivery and patient compliance are assured by virtue of the breath actuation feature of the **AeroEclipse®** nebulizer and the reduced time to deliver a specific equivalent dose of medication compared with a conventional nebulizer will improve cost effectiveness of treatment."

Clinical and Economic Impact Resulting from a Hospital-Wide Conversion from Small Volume Nebulizers to the AeroEclipse® Breath Actuated Nebulizers (PN 74188)

R.S. Pikarsky and R. Acevedo; *Respiratory Care*, September 2002; 47(9): 1075

Conclusion: "Hospital wide conversion to BAN is cost-effective due to the decreased administration time. Therapist availability was enhanced, contributing to a significant reduction in omitted treatments. ... This may be one of several strategies to address the problems of Respiratory Care Staff shortages ... "



An In Vitro Investigation of Common Nebulizer Dosing Protocols, Comparing a Breath-Actuated with Conventional Pneumatic Small Volume Nebulizer (SVN) (PN 76158)

M.W. Nagel, C.C. Doyle, S.A. Bates, J.P. Mitchell; *Respiratory Drug Delivery* 8, 2002.

Conclusion: "The Care-giver can alter either the drug concentration or volume placed in the reservoir of the **AeroEclipse®** SVN to achieve a desired dosing regimen. This nebulizer delivered a comparable mass of albuterol in a significantly shorter time ..."

The Delivery Time, Efficacy, and Safety of Beta Agonist Bronchodilator Administration with the AeroEclipse® Breath-Actuated Nebulizer (BAN) (PN 74182)

R. Pikarsky, T. Farrell, R. Acevedo, W. Fascia, C. Roman; *Chest* 2001; 120(4) 218S.

Conclusion: "Delivery of 0.5 ml Albuterol (2.5mg) with 0.5t ml Normal Saline using the BAN offered the best delivery time, efficacy and safety profile of the nebulizer trials ... the decrease in delivery time could have a significant impact on resource utilization."

Breath-Actuated Nebulizer Helps Avoid Intubation (PN 76159)

S. Klopff and C. Schramm; *Advance for Managers of Respiratory Care*, November 2001, p68.

Conclusion: "Treatment time was cut in half for this patient, who did not have insurance. The nebulizer saved the hospital thousand of dollars because without it the patient would have most likely ended up in the ICU on a ventilator."

Performance of a New Breath-Actuated Small Volume Nebulizer (SVN) for the Delivery of a Combination Anticholinergic/Bronchodilator (PN 74185)

M.W. Nagel, K.J. Wiersema, S.L Bates, J.P. Mitchell; *American Journal of Respiratory and Critical Care Medicine*, 2001, 163(5) A443.

Conclusion: "The **AeroEclipse®** BAN is significantly more efficient for the delivery of this combination anticholinergic/ bronchodilator than a conventional AE-SVN."

The Clinical Efficacy of Using the AeroEclipse® Breath Actuated Nebulizer (BAN) in Pulmonary Lab Testing and Implications for General Use (PN 74176)

Y.M. Christensen, C.J. Flanigan, S.A. Ravenscraft; *Respiratory Care* 2001; 46(10):1084.

Conclusion: "... the BAN produced improved results in FVC, FEV1 and FEF 25-75%. Substantially shorter test times delivered by the BAN would allow for more tests and associated revenue."

Delivery of a Suspension Corticosteroid Formulation by Small Volume Nebulizers: A Comparative Bench Study (PN 74174)

J.P. Mitchell, M.W. Nagel, K.J. Wiersema, S.L Bates; ERS Annual Congress, September 2001, Abstract #290.

Conclusions: "The breath-actuation feature of the **AeroEclipse®** SVN minimizes aerosol release to the environment during exhalation, which may cause adverse effects to both patient and health care provider."

Predicting Lung Deposition with a Cascade Impactor (PN 76017)

S. Sangwan, F. Hull, R. Condos, G.C. Smaldone; *Journal of Aerosol Medicine*, 2001, 14(3):421.

Conclusions: "Regional deposition (upper airway vs. lung) was predicted by MCI analysis only when effect of both connection tubing and breathing were considered in the bench protocol."

Comparison of Drug Output from Four Different Reservoir Type Nebulizers (PN 74183)

D.E. Geller, and B. Kesser; *American Journal of Respiratory and Critical Care Medicine*, 2001, 163(5) A444.

Conclusion: "The **AeroEclipse®** BAN delivers a greater total dose of drug as well as a greater amount of drug in the fine particle range, most likely to deposit in the lower airways."

Clinical Evaluation of a Breath Actuated Small Volume Nebulizer (BA-SVN) (PN 76094)

S. Klopff, N. Schneiderman, H. Payne, C. Schramm, M. Nagel, J.P. Mitchell; *Respiratory Care*, 2000(45)89:979.

Conclusion: "Use of the **AeroEclipse®** BAN appears to result in good clinical outcomes. Minimum number of treatments, shorter treatment duration and minimal side effects were noticed with this device."

Improving Resource Utilization with New Technologies (PN 76093)

M.A. Lewis, S.S. Harris, S.L. Campbell, A.L. Hodges, D.M. Clark; *Respiratory Care*, 2000(45)8:981.

Conclusion: "These data illustrate the cost-effectiveness of two technologies utilized in our hospital, while patient care and satisfaction were maintained. OT hours decreased by 25% while treatments were delivered to more patients ..."

These studies used the **AeroEclipse®** Breath Actuated Nebulizer, not the **AeroEclipse®** II Breath Actuated Nebulizer which is currently on the market. The **AeroEclipse®** BAN and **AeroEclipse®** II BAN are equivalent in regards to in vitro performance.*

*ARE FIRST AND SECOND GENERATION, MECHANICALLY-OPERATED BREATH-ACTUATED NEBULIZERS (BAN) COMPARABLE BASED ON IN VITRO PERFORMANCE?

J. Schmidt, J. Pevler, C. Doyle, K. Wiersema, M. Nagel, J. Mitchell; *Respiratory Drug Delivery*, 2006: 817-819.

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