# The Orlov Nebulizer

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PRESS RELEASE – FOR IMMEDIATE RELEASE

DOCTOR'S DEVICE AIMS TO MAKE CURRENT HOSPITAL A&E NEBULIZERS OBSOLETE.

Yorkshire (UK) based Ian Bullock, a consultant-level A&E Doctor, has conceived, designed and applied for a patent for a revolutionary new approach to the emergency treatment of COPD (chronic obstructive pulmonary disease) sufferers.

The Orlov nebulizer chamber ™, has been designed with the help of a nuclear scientist alongside a retired owner of a drug R&D company and is now being developed by the company they jointly created - CN RESPIRATORY SOLUTIONS LTD (CNR).

*An A&E Solution for an A&E Problem*

COPD patients in emergency situations often need two key treatments in the acute phase of any hospital admission: fixed-rate oxygen, and nebulized broncho-dilator drugs. These are currently two mutually exclusive treatments in an A&E setting.

Traditional nebulizer manufacturers have focused on optimising the speed with which nebulizer fluid is delivered, which has less clinical relevance in an acute COPD exacerbation.

The new chamber can deliver both fixed rate oxygen and nebulization.

Commenting, Dr Bullock said, "What we have desperately needed for years is the ability to provide both fixed rate oxygen AND nebulization at the same time, but it seems we forgot to tell anyone!"

*Operational, clinical and financial benefits*

Present approaches require continual switching from one piece of equipment to another. (See 'Background' below). The rotational nature of that treatment causes high nursing staffing demand, increases potential for mistakes, and ties up significant amounts of single use equipment.

Using the Orlov nebulizer chamber ™ would stop this continual switching, and its implications.

Whilst the key goal is improved clinical outcomes, it should lower the overall cost of treating emergency case patients and reduce nursing staff workloads.

CNR hope it will prevent some patients from deteriorating and needing non-invasive ventilation- which requires a tight-fitting mask mechanically forcing air into the patients' lungs repeatedly for an extended period of time, which can be distressing.

*A&E professionals' response*

The repeated reaction from healthcare professionals when told about the device and its mechanics, is a disbelief so that it does not already exist if the problem has been so fixable all along. However, CNR has not been able to find any such device currently in production, or in the medical literature.

*Background*

*Present 'Variable Rate Oxygen Delivery' Treatment*

For patients who need both oxygen and nebulized drugs, two options presently exist:

Oxygen delivery via nasal cannulae can be used alongside an air driven nebulizer, but the oxygen concentration delivered is unreliable and prone to variation. The concentration of oxygen achievable by nasal cannulae is also limited.

For those patients with a very high oxygen requirement, that same nebulizer chamber can be driven by oxygen.

Both the above treatments risk too much oxygen being delivered if a COPD patient is a "carbon dioxide retainer". Carbon dioxide retainers are sensitive to the concentration of oxygen delivered and are at risk of retaining carbon dioxide. They can progress to type 2 respiratory failure, which can slow their breathing until it stops, and can be life-threatening. Even if this does not occur, many need non-invasive ventilation which as mentioned above is expensive, has a high nursing, equipment and consumables need, and leaves patients at risk of significant complications.

The Orlov is intended to enable a titratable fixed rate oxygen concentration in conjunction with nebulization, which means the oxygen demands of more patients can be met without pushing them into type 2 respiratory failure.

*The device and its potential*

The new device combines a standard nebulizer chamber which is configured to deliver fixed-rate oxygen at the same time as a broncho-dilator drug. It will work in combination with existing hospital equipment and will require only 1 or 2 minutes of training to familiarise staff with its operation.

Importantly for interested manufacturers the device is adaptable to incorporate any current nebulizer design so existing intellectual property is still integrable and relevant.

It is hoped that once the necessary regulatory steps are taken, it will be integrated into future iterations of national guidelines for oxygen use in adults in emergency healthcare settings.

CNR believe the system could become standard UK-wide, and later being adopted worldwide.

Due to its flexibility and relative low cost when compared with the cost of other novel healthcare equipment, the Orlov nebulizer chamber ™ should rapidly replace normal nebulizers in a hospital setting as it will at low cost perform normal nebulizer functions alongside the added benefits described as above.

CN RESPIRATORY SOLUTIONS LTD (CNR)

CNR has been formed for the purpose of commercialising the device and is presently exploring investment, out-licensing and development options before making a final decision on the way forward. Website www.cnresp.co.uk

Contact

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EDITORS NOTES

TYPICAL **TRADITIONAL** NEBULIZER SCHEMATIC

(The new Orlov chamber is not shown for commercial sensitivity reasons)

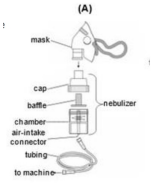


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Image source: https://www.nationwidechildrens.org/family-resources-education/health-wellness-and-safety-resources/helping-hands/aerosol-therapy

In 2018 328 million people were estimated to have COPD(1) and the same paper claimed that by 2033 it would be the leading cause of death.

The WHO estimate 3.23 million deaths from COPD in 2019. (2)

In 2019 The LANCET reported, “In 2019, the global prevalence of COPD among people aged 30–79 years was 10·3%” (3), giving a figure of 392m sufferers.

The vast majority (80%) of sufferers live in Low and Middle Income Countries. (3)

A study reported in International Journal of Chronic Obstructive Pulmonary Disease (4) reviewing 340,515 patients, identified 25696 (7.5%) “Severe Exacerbation cases”

A study in 2006 (5) identified patients have 2.5 to 3 severe exacerbations a year.

A study in 2005 reported in BMJ Journals (6) looking at a cohort of 300 male subjects identified “Eighty nine patients (29.3%) were admitted to hospital at least once during 1998.” The same report identified that 44% suffered some form of exacerbation.

The NHS reports 1.2m COPD sufferers in the UK, and that 8% of emergency admissions are for COPD (7). Excluding Covid data, the Kings Fund reports 25m A and E visits per annum (8). These data together suggest around 1.7m COPD admissions per annum.

(1) Quaderi, S. A., & Hurst, J. R. (2018). The unmet global burden of COPD. Global Health, Epidemiology and Genomics, 3. https://doi.org/10.1017/gheg.2018.1

(2) https://www.who.int/news-room/fact-sheets/detail/chronic-obstructive-pulmonary-disease-(copd)

(3) https://www.thelancet.com/article/S2213-2600(21)00511-7/fulltext

(4) Whittaker, H., Rubino, A., Müllerová, H., Morris, T., Varghese, P., Xu, Y., Nigris, E. D., & Quint, J. K. (2022). Frequency and Severity of Exacerbations of COPD Associated with Future Risk of Exacerbations and Mortality: A UK Routine Health Care Data Study. International Journal of Chronic Obstructive Pulmonary Disease, 17, 427-437. https://doi.org/10.2147/COPD.S346591

(5) Donaldson, G. C., & Wedzicha, J. A. (2006). COPD exacerbations · 1: Epidemiology. Thorax, 61(2), 164-168. https://doi.org/10.1136/thx.2005.041806

(6) Severe acute exacerbations and mortality in patients with chronic obstructive pulmonary disease, J J Soler-Cataluña1, M Á Martínez-

(7) https://transform.england.nhs.uk/key-tools-and-info/digital-playbooks/respiratory-digital-playbook/digital-service-to-manage-high-risk-chronic-obstructive-pulmonary-disease-copd-patients/

(8) https://www.kingsfund.org.uk/insight-and-analysis/long-reads/whats-going-on-with-ae-waiting-times#:~:text=But%20aside%20from%20the%20Covid,million%20attendances%20in%202011%2F1