



# CONNECTED HEALTH – AN EFFECTIVE SOLUTION TO IMPROVE PATIENT ADHERENCE

Here, Sai Shankar, Director for Connected Devices Business Development, Aptar Pharma, details the problem of non-adherence, in particular in asthma and COPD, and how its solution, along with myriad other benefits, can be found in digital healthcare and connected devices.

## THE PROBLEM: NON-ADHERENCE

The success of any medication is dependent on the individual patient's adherence to the dosing regimen and, in unfortunate reality, 60% of patients fail to take their medication properly. The impact of these compliance issues does not merely begin and end with the patient – it extends throughout the supply chain, from pharmaceutical companies, through hospital services, all the way to the physician.

### The Scale of the Problem is Significant

To illustrate, let us examine the prevalent conditions of asthma and COPD. We know that there are 334 million people worldwide who suffer from asthma and 100 million who suffer from COPD.<sup>1</sup> We know that

symptoms in around 50-60% of asthma patients are uncontrolled<sup>2</sup> and adherence rates to daily controller medications are under 30%.<sup>3-6</sup> It is predicted that another 100 million people will suffer from asthma by 2025,<sup>1</sup> so the need to manage patient adherence better will only accelerate. This is an issue we need to address urgently today.

### The Cost of Non-adherence is Equally Enormous

The treatment cost of asthma and COPD is approximately US \$100 billion (£75.6 billion) per year in the US alone. A further £100 billion a year is spent on managing respiratory disease in Europe.<sup>7-9</sup> Annually, it is estimated that pharmaceutical companies in the US lose \$188 billion in revenue because of poor adherence, with the overall cost of non-adherence to the healthcare system closer to \$300 billion.

So, the impact is felt at all levels. Non-adherence accounts for approximately 50% of avoidable health costs, with about two-thirds of said avoidable costs attributable to hospitalisation. With an ever-increasing geriatric population, particularly in developing countries, the incidence of non-adherent hospitalisations will increase – as will, inevitably, the cost of healthcare in the future.

“Around 50-60% of symptoms in asthma patients are uncontrolled and adherence rates to daily controller medications are under 30%. It is predicted that another 100 million people will suffer from asthma by 2025, so the need to better manage patient adherence will only accelerate.”



**Mr Sai Shankar**  
Director for Connected Devices  
Business Development  
E: sai.shankar@aptar.com  
T: +1 847 800 6058

**Aptar Pharma**  
475 West Terra Cotta  
Crystal Lake, IL 60014  
United States

[www.aptar.com/pharma](http://www.aptar.com/pharma)



there could be a further 100 million asthma sufferers by 2025 – that's almost a 33% increase expected in just eight years.

There is clear data to show that the overwhelming majority of patients cannot or do not control their asthma effectively, with adherence rates to daily controller medications under 30%. The cost this presents to the entire healthcare community is significant, with the treatment cost of respiratory diseases being \$206 billion in the US and Europe. Ultimately, however, it is the patient who suffers the most, with high levels of hospitalisation and readmission, alongside the increases in their healthcare costs.

As an industry, we can respond to this need today with the provision of connected devices – either as a modification to existing drug delivery devices or as an integrated device. For example, Aptar Pharma has a portfolio of devices that already help mitigate against adherence and compliance issues, with connected inhalers and

ophthalmic devices currently being tested.

There is a clear desire from everyone in the supply chain – from pharma companies and healthcare providers, to physicians and patients – to improve patient health outcomes. By creating a connected ecosystem, real changes can be affected at an individual and global level, whereby patient engagement increases, dose adherence improves and overall health outcomes benefit. Not only would patients manage their medication better, they would also reduce the financial burden on themselves and healthcare providers.

#### ABOUT THE COMPANY

Aptar Pharma is part of AptarGroup, Inc (NYSE: ATR), a leading global supplier of a broad range of innovative dispensing and sealing solutions for the beauty, personal care, home care, prescription drug, consumer healthcare, injectables, food and beverage markets. AptarGroup is headquartered in Crystal Lake, IL, US, with manufacturing facilities in North America, Europe, Asia and South America.

#### REFERENCES

1. "Chronic Respiratory Diseases". World Health Organization, 2007. ([www.who.int/gard/publications/chronic\\_respiratory\\_diseases.pdf](http://www.who.int/gard/publications/chronic_respiratory_diseases.pdf))
2. Stanford RH, et al, "Predictors of uncontrolled asthma in adult and pediatric patients: analysis of the Asthma Control Characteristics and

Prevalence Survey Studies". *J Asthma*, 2010, Vol 47(3), pp 257-262.

3. Barnes CB, Ulrik CS, "Asthma and adherence to inhaled corticosteroids: current status and future perspectives". *Resp Care*, 2015, Vol 60(3), pp 455-468.
4. Bender BG, Pedan A, Varasteh LT, "Adherence and persistence with fluticasone propionate/salmeterol combination therapy". *J Allergy Clin Immunol*, 2006, Vol 118(4), pp 899-904.
5. Williams LK, et al, "A cluster-randomized trial to provide clinicians inhaled corticosteroid adherence information for their patients with asthma". *J Allergy Clin Immunol*, 2010, Vol 126(2), pp 225-231.
6. Wu AC, et al, "Primary Adherence to Controller Medications for Asthma Is Poor". *Ann Am Thorac Soc*, 2015, Vol 12(2), pp 161-166.
7. Guarascio AJ, et al, "The clinical and economic burden of chronic obstructive pulmonary disease in the USA". *ClinicoEconomics and Outcomes Research*, 2013, Vol 5, pp 235-245.
8. Barnett SB, Nurmagambetov TA, "Costs of asthma in the United States: 2002-2007". *J Allergy Clin Immunol*, 2011, Vol 127(1), pp 145-152.
9. Gibson GJ, et al, "Respiratory health and disease in Europe: the new European Lung White Book". *Eur Resp J*, 2013, Vol 42, pp 559-563.

## ABOUT THE AUTHOR

Sai Shankar is Director for Connected Devices Business Development at Aptar Pharma. Mr Shankar has 15 years of product development and business strategy experience in the pharmaceutical industry. He joined Aptar in April 2017, with previous stints at Allergan and Sanofi.

# Full 2018 calendar of topics now available

**ON** drugDELIVERY

[www.ondrugdelivery.com](http://www.ondrugdelivery.com)

Download  
the 2018  
Media Pack today!







## Together, we can tackle patient adherence. Let's connect.

### Aptar Pharma – delivering connected, intuitive devices to improve patient health outcomes

As the leader in respiratory drug delivery systems, Aptar Pharma is focused on supporting customers and patients to effectively treat respiratory diseases including asthma & COPD.

Today, 60% of patients fail to comply with their medication regimen. At Aptar Pharma, we strongly believe that patient behavior can be changed through connected and intuitive, user-friendly devices. This can significantly increase dose adherence and improve patient health outcomes. That's why we are partnering with digital health solution providers to develop a portfolio of connected devices such as MDIs and DPIs.

To find out more about how we can help you deliver better patient health outcomes via connectivity, call **Chris Baron**, Associate Director, Business Development, at Aptar Pharma on **+33 6 3095 5331** or email **chris.baron@aptar.com**

Delivering solutions, shaping the future.

**Aptar**   
pharma