

The Problem

1.1 million UK children are suffering from Asthma¹



Asthma is the most common long-term medical condition for children and the most common reason for urgent admissions to hospital in children and young people in England².



There is a lack of time to provide proper asthma healthcare training (the mean duration of a GP surgery consultation is between 9.22 - 10.22 minutes)³⁻⁴.

93% of asthma sufferers use their inhalers incorrectly⁵.

The Impact

Every 10 seconds someone is having a potentially life-threatening asthma attack and unable to breathe⁶.

75% of asthma admissions are thought to be preventable; small improvements could significantly reduce admissions⁷.

Caring for people who experience an asthma attack costs

3.5 Times

more than caring for those whose asthma is well managed⁷.

69%

of parents with asthmatic children take time off work to look after asthmatic children⁸.

Where proper inhaler training programmes have been put in place, emergency admissions have reduced by **50%** and asthma associated deaths by **75%**⁹.

WHAT IS MYSPIRA[®]

First augmented reality asthma inhaler training app for 6 - 13 year olds addressing incorrect inhaler use and asthma management. A fun medically approved AR healthcare tool to engage the user with the learning experience.

HOW

Using a mobile device, a child takes 20 minutes to complete 8 fun and critical chapters developed by Healthcare Professionals including:

- ▣ Asthma Keywords
- ▣ Asthma scenarios
- ▣ Triggers and symptoms
- ▣ What happens in the lungs
- ▣ How to prepare an inhaler
- ▣ Preventer and Reliever
- ▣ How to use a spacer
- ▣ Inhaler procedure

With a clearer understanding of the disease, children are better equipped to manage their symptoms.

Key Features

- ▣ Award winning AR experience available on most mobile devices bridging the gap between virtual and physical spaces
- ▣ Uses gamification principles in teaching and behavioral change
- ▣ A feedback loop that encourages learning and provides intrinsic and extrinsic rewards
- ▣ Meet fun-loving characters in 3D
- ▣ Create personalised Asthma Action Plan
- ▣ Asthma Trigger Tracker
- ▣ Bonus AR game



Expected Benefits



Improved child engagement and understanding of the disease.



Reduced environmental impact, HCP time to conduct 'proper patient education' and massive cost savings to the NHS.



Improved long-term recall of important asthma information and inhaler technique.

Approach

MySpira is designed to be used without GP intervention.

During an asthma appointment (average 9.22 - 10.22 minutes³⁻⁴), HCPs would love to spend more time with each patient but there's simply a lack of resource available. With an app, the child can take it home and continue to learn and practice in an environment they are comfortable in.

The interaction and gamification is what's key to the high degree of learning engagement and outcomes.

In 2018/19 for children aged 5-15 years, asthma accounted for 12,319 emergency admissions costing the NHS between £8,660,257 - £15,842,234 (Each admission costs between £703 - £1,286)¹⁰⁻¹¹

6,160 emergency admissions. Potential saving in reduction of emergency admissions between **£4.3m - £7.9m**

4,982 emergency admissions. Potential saving in reduction of emergency admissions between **£3.5m - £6.3m**

3,080 emergency admissions. Potential saving in reduction of emergency admissions between **£2.1m - £3.9m**

Scenario 1 - 50% cost saving based on NICE findings
Where proper inhaler training programmes have been put in place emergency admissions have reduced by 50%⁹

Scenario 2 - assuming that 20% of the emergency admissions had effective inhaler training

Scenario 3 - assuming that 50% of the emergency admissions had effective inhaler training

For £2.00 per patient MySpira could potentially save the NHS millions in admissions (**5-15 years - between £2,165,204 - £7,921,760**). Average number of children with asthma within a CCG is 1,700. Based on the average number the cost per CCG for MySpira would be £3,400.

“ Spira is a creative app that will give children with Asthma an opportunity to fully understand their condition. The learning process will help them to take better control and gain more independence.

Karyn McBride, Senior Asthma Nurse at NHS Stowhealth

“ In my opinion the application is suitable for children. The important educational information has been designed to be easily accessible, through gamification, to the target age range of this application.

Dr Simon Rudland (FRCGP)

“ We know that allergies can trigger asthma exacerbations in up to 90% of children with asthma, and whilst it is a condition that cannot currently be cured, it can be well controlled with a good action plan and inhaler technique. 21st Century children are digital natives, so it makes perfect sense to use technology as a means of educating and engaging them about their health.

Amena Warner, Head of Clinical Services at Allergy UK

“ It really helps if you want to learn about your inhalers. If you don't use your inhalers properly, your chest will go all funny.

Crawford Church of England Primary School student

Research Case Study

Examining the Efficacy of a Novel Augmented Reality Mobile Delivery Platform for the Enhancement of Asthma Care Education for Children¹²

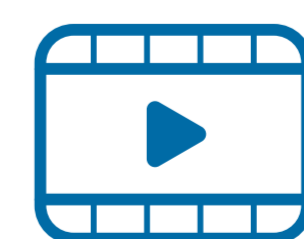


In collaboration with University of Suffolk, MySpira was involved in a research study comparing 3 types of learning in a cohort of 96 children.

The findings indicate that MySpira surpasses the traditional educational materials, specifically in terms of enjoyment rating, the use of different inhalers' techniques, particularly in the younger group (aged 6-9 years). MySpira may enhance the level of available asthma care in an attempt to resolve one of the major problems facing asthma sufferers and their carers.



MySpira is 69% more effective than leaflets (baseline change)



Videos are 33% more effective than a leaflets (baseline change)



MySpira is 36% more effective than videos (baseline change)

REFERENCES

1. Asthma UK Asthma facts and statistics <https://www.asthma.org.uk/about/media/facts-and-statistics/>
2. NHS England: childhood asthma <https://www.england.nhs.uk/childhood-asthma/#:~:text=Asthma%20is%20the%20most%20common%20condition%20from%20asthma%20every%20year>
3. Hobbs, R, Bankhead, C, Mukhtar, T, Stevens, S, Perera-Salazar, R, Holt, T, & Salisbury, C. (2018) Clinical workload in UK primary care: a retrospective analysis of 100 million consultations in England, 2007-14, The Lancet, 387, 10035, 2323-2330. <http://www.sciencedirect.com/science/article/pii/S0140673616006206>
4. Elmore, N., Burt, J., Abel, G., Maratos, F., Montague, J., Campbell, J. & Roland, M. (2016) Investigating the relationship between consultation length and patient experience: a cross-sectional study in primary care, British Journal of General Practice, DOI: 10.3399/bjgp.16x687733.
5. Independent 20th December 2014. Available at: <https://www.independent.co.uk/news/science/asthma-and-allergy-sufferers-cannot-correctly-use-devices-designed-save-lives-9937557.html>
6. NHS Conditions, asthma-attack. Available at: <https://www.nhs.uk/conditions/asthma/asthma-attack/>
7. Yorkshire and Humber Network Asthma Better for Less <https://www.networks.nhs.uk/nhs-networks/respiratory-leads/documents/Better%20for%20Less%20-%20%20%20Asthma%20-%20York%20-%20Humber.pdf>
8. Allergy UK. Allergy prevalence: Useful facts and figures. Available at: https://www.allergyuk.org/assets/000/001/369/Stats_for_Website_original.pdf?1505209820
9. NICE: Improving adherence to asthma medication. Asthma: diagnosis, monitoring and chronic asthma management. NICE guideline [NG80] Published date: 29 November 2017. Last updated: 12 February 2020.
10. NHS Digital - Admitted patient care and outpatient procedure prices 2019/2020.
11. NHS Digital, Hospital Episode Statistics for England. Admitted Patient Care statistics, 2018-19.
12. S, Al-Naimi et al. Examining the Efficacy of a Novel Augmented Reality Mobile Delivery Platform for the Enhancement of Asthma Care Education for Children.