SMART RESPIRATORY

White Paper: Unlocking Efficiency in Respiratory Care through Smart Asthma Virtual Monitoring

Date: March 2025 **Authors:** Darshan Negandhi, Clinical Research Team (Smart Respiratory & Pearl Chemist Group) **Target Audience:** ICB Respiratory Leads, Primary Care Networks (PCNs), Integrated Neighbourhood Teams (INTs), GPs & GP Federations, Pharmacists.

Executive Summary

The management of chronic respiratory conditions in the UK is currently challenged by long waiting times, frequent misdiagnosis, and low medication adherence. With 62% of respiratory patients waiting over 18 weeks for treatment, there is an urgent need for solutions that align with the NHS 10-Year Plan's "Three Shifts": from hospital to community, from sickness to prevention, and from analogue to digital.
Smart Asthma Monitoring is a comprehensive **virtual monitoring** platform designed to disrupt this traditional care model. Recommended for use in the NHS by the **NICE Digital Asthma Management Early Value Assessment (EVA)**, the system has demonstrated the ability to transform subjective self-reporting into objective, clinically useful data. Based on a multi-centre service evaluation of 667 patients across 26 NHS and **HSE Ireland** centres, the system generates an annualised financial benefit of approximately £212.80 per patient, representing a significant return on investment against a service cost of £69.

1. The Clinical Challenge: Respiratory Inefficiencies

The Failure of Traditional Monitoring

Traditional asthma management relies heavily on mechanical peak flow meters and paper diaries. However, the evidence is stark: mechanical meters suffer from high levels of fabrication, and only 10% of patients provide clinically useful data. This lack of objective insight leads to "treatment drift," where clinicians step up medication doses based on poor control without knowing if the underlying cause is disease progression or simply poor adherence (typically 50%).

Diagnosis and Triage Delays

Asthma is often inactive at the time of a clinical appointment, leading to inconclusive spirometry or FeNO tests in up to 75% of cases. This results in frequent misdiagnosis and a "crisis-response" cycle. The BTS/NICE/SIGN NG245 guidelines mandate serial PEF monitoring when spirometry is delayed, but manual tracking is often insufficient to inform the triage process or accelerate a confident diagnosis.

2. The Solution: Smart Asthma Virtual Monitoring

The platform provides a robust **virtual monitoring** framework consisting of three integrated components:

1. **Smart Sensors:** Cost-effective sensors for inhalers (MDI) and lung function (PEF).
2. **Patient App:** A digital interface for self-monitoring, triggers, and automated notifications.
3. **Clinician Dashboard:** A remote monitoring hub for data-driven decision-making and virtual triage.

Alignment with National Strategy

The service is built to meet the core objectives of the **NHS 10-Year Plan** and **Core20PLUS5** health inequality goals:

- **From Hospital to Community:** Facilitates virtual consultations and earlier step-down to primary care.
- **From Sickness to Prevention:** Real-time alerts allow clinicians to intervene before an exacerbation requires emergency care.
- **From Analogue to Digital:** Smart Asthma is a leading solution in the shift to digital care, providing a more reliable way to collect data than mechanical meters; 50% of patients recorded clinically useful PEF charts, a 5x improvement over traditional methods.

3. Health Economic Evaluation: A Business Case for the NHS

The economic value of Smart Asthma **virtual monitoring** is derived from its ability to mitigate unnecessary resource use across five key pillars.

System Impact	Evidence / Assumptions	Probability	Estimated Annual Benefit
Mitigating Unnecessary Visits	Avoided 1 OPA (£120) and 1 GP visit (£36)	30%	£46.80
Preventing Unnecessary Referrals	Avoided specialist OPA via higher clinician confidence	10%	£12.00
Preventing ED Re-attendance	Proactive management prevents 1 ED visit (£250)	5%	£12.50
Earlier Step-Down to GP	Freeing specialist resources 6 months sooner	30%	£18.00
Avoiding Medication Step-ups	Identifying non-adherence avoids £300 dose escalation	33%*	£100.00
Total Estimated Financial Benefit			**£189.30**

**Assumes 1/3 of patients avoid a planned step-up via adherence monitoring (MARTINA project benchmark).*

Return on Investment (ROI)

With a three-month service cost of £69, the annualised financial benefit of £189.30 to £212.80 demonstrates that the service is a **cash-releasing investment**. The primary drivers of this value are medication optimisation and the reduction of high-cost secondary care interventions, as validated by the **NICE EVA** recommendation.

4. Broader Strategic Impacts

Improving Health Equity (Core20PLUS5)

By providing accessible digital tools and supporting multiple languages, the service addresses the disproportionate burden of asthma in underserved communities. It empowers patients who may struggle with traditional health literacy to engage with their care via automated reminders and visual data.

Supporting NHS Net Zero Goals

Every avoided hospital appointment or A&E attendance reduces the NHS carbon footprint. Furthermore, by improving adherence to preventer therapy, the service reduces the overuse of high-carbon reliever inhalers (SABA), directly contributing to the Green NHS roadmap.

5. Conclusion and Recommendations

Smart Asthma Monitoring is a high-value, cost-effective intervention that moves respiratory care from a reactive to a proactive model. The multi-centre evaluation of 667 patients across the NHS and **HSE Ireland** confirms that the system is not merely a digital tool but a comprehensive solution for system reform.

Recommendations for ICB Adoption:

1. **Integrate with Triage:** Use the clinical dashboard to inform respiratory triage, ensuring high-value face-to-face appointments are reserved for the most complex cases.
2. **Mandate for Step-ups:** Implement **virtual monitoring** of adherence as a prerequisite before any specialist treatment "step-up" to avoid medication wastage.
3. **Scale via Neighbourhood Teams:** Deploy the platform within Integrated Neighbourhood Teams to facilitate the shift of care from secondary to primary settings.

Contact: Antony Wilson at antony@smartrespiratory.com