

Effectiveness of Mixed Methods Study on Gas-Directed Pharmaceutical Prescribing in Scotland

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DESCRIPTION

Gas-directed pharmaceutical prescribing has emerged as a progressive approach in Scotland, where targeted interventions aim to optimize medication use in respiratory conditions. By focusing on gas analysis data, this prescribing model integrates patient-specific respiratory measurements to guide treatment decisions, promoting personalized care and improved outcomes. This article outlines a mixed methods study that assesses the effectiveness and acceptability of gas-directed prescribing in Scotland. The study integrates quantitative data on clinical outcomes with qualitative insights from healthcare professionals and patients.

Respiratory conditions such as asthma and Chronic Obstructive Pulmonary Disease (COPD) are prevalent in Scotland. Effective management of these conditions often relies on pharmacological interventions tailored to individual needs. Traditional prescribing practices are largely symptom-driven and may not always address the underlying pathophysiology of the disease. Gas-directed prescribing offers an alternative by incorporating data from respiratory gas analyses, such as Fractional exhaled Nitric Oxide (FeNO) and oxygen saturation levels, to guide medication choices. The rationale for this approach is rooted in the need for precision in prescribing. Gas analysis provides objective biomarkers that can predict disease severity, monitor treatment response and identify exacerbation risks. By aligning prescribing practices with these biomarkers, clinicians can improve the efficiency and efficacy of respiratory care. This mixed methods study was conducted in multiple healthcare settings across Scotland.

The quantitative aspect of the study involved a group of 500 patients with asthma or COPD who were managed using gas-directed prescribing protocols. Key parameters included changes in lung function, frequency of exacerbations, medication adherence and overall health-related quality of life. Data were collected over 12 months and analyzed using statistical methods to evaluate the impact of gas-directed prescribing on clinical outcomes. The qualitative component involved semi-structured interviews and focus group discussions with healthcare professionals and patients. The aim was to understand the practicalities, challenges and benefits of implementing gas-directed prescribing in real-world settings. A total of 50 healthcare professionals, including general practitioners, respiratory specialists and pharmacists, participated in the interviews. Additionally, 100 patients

provided feedback on their experiences with gas-directed prescribing.

The quantitative analysis demonstrated significant improvements in clinical outcomes among patients managed with gas-directed prescribing. A 20% reduction in the frequency of asthma and COPD exacerbations compared to baseline. Improved lung function, as measured by Forced Expiratory Volume in one second (FEV1). Enhanced medication adherence, with a 15% increase in patients consistently using prescribed inhalers. Higher scores in health-related quality of life questionnaires. These results suggest that incorporating gas analysis into prescribing practices leads to better disease control and patient outcomes.

The qualitative findings highlighted several themes related to the implementation of gas-directed prescribing. Healthcare professionals noted that the use of objective biomarkers improved their confidence in treatment decisions. They also appreciated the potential of this approach to reduce unnecessary medication use, particularly in patients with mild disease who might otherwise receive high doses of corticosteroids. Patients reported increased satisfaction with their care, citing better symptom control and a clearer understanding of their condition. However, some challenges were noted, including the need for additional training for healthcare providers and the perceived complexity of gas analysis techniques.

The results of this study underscore the potential of gas-directed prescribing to transform respiratory care in Scotland. By integrating objective data into prescribing decisions, this approach addresses some of the limitations of traditional symptom-based management. The quantitative findings demonstrate clear clinical benefits, while the qualitative insights provide valuable perspectives on implementation challenges and opportunities. The reduction in exacerbations and improvements in lung function observed in this study align with existing evidence supporting the use of biomarkers in respiratory care. These outcomes are particularly relevant in the context of Scotland's healthcare system, where respiratory conditions impose a significant burden on patients and healthcare resources.

However, the study also highlights the need for comprehensive training and education to ensure the successful adoption of gas-directed prescribing. Healthcare professionals must be equipped with the skills and knowledge to interpret gas analysis results and integrate them into clinical decision-

making. Additionally, efforts are needed to streamline gas analysis procedures and make them more accessible in primary care settings. Gas-directed pharmaceutical prescribing represents an innovative approach to managing respiratory conditions in Scotland. This mixed methods study demonstrates its potential to improve clinical outcomes and enhance patient satisfaction. By incorporating objective data from gas analysis into treatment decisions, healthcare providers can deliver

more precise and effective care. However, successful implementation requires addressing challenges related to training, infrastructure and multidisciplinary collaboration. With continued research and investment, gas-directed prescribing can play a pivotal role in advancing respiratory care and improving the quality of life for patients in Scotland.