

Chronic respiratory disease: Why diagnosis often comes too late

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Chronic respiratory diseases (CRDs) represent a substantial and growing global health burden, particularly in low- and middle-income countries (LMICs). These conditions, including chronic obstructive pulmonary disease (COPD) and asthma, often go undiagnosed or are managed inadequately, leading to preventable morbidity and mortality. The challenges in these settings are systemic, extending from initial symptom recognition to sustained access to appropriate care, a complex pathway that demands careful mapping to identify critical intervention points.

KEY TAKEAWAYS

- **The Pivot:** The patient journey for CRDs in resource-limited settings is fragmented, with significant delays at multiple stages from symptom onset to diagnosis and effective management.
- **The Data:** Patients often experience prolonged periods of symptomatic disease before receiving a formal diagnosis, frequently due to limited access to diagnostic tools and trained personnel.
- **The Action:** Clinicians in these environments must advocate for improved primary care infrastructure, enhanced diagnostic capabilities, and integrated care models to bridge existing gaps in CRD management.

Chronic respiratory diseases, encompassing conditions like asthma, chronic obstructive pulmonary disease, and interstitial lung diseases, impose a profound global health burden. In high-income countries, established diagnostic pathways and management guidelines aim to mitigate disease progression and improve quality of life. But in resource-limited settings, the reality is starkly different. Patients often navigate a labyrinthine path from the first cough or breathlessness to a definitive diagnosis and consistent treatment, a journey fraught with barriers at every turn. This complex patient journey is not merely an academic exercise; it dictates the trajectory of millions of lives, determining who receives timely care and who succumbs to preventable complications.

The initial presentation of CRDs is frequently insidious, with symptoms such as chronic cough, sputum production, and dyspnea often dismissed as normal consequences of aging, environmental exposures, or other common ailments. This misattribution is particularly prevalent in regions where biomass fuel exposure is widespread, and smoking rates remain high. Patients may self-medicate with over-the-counter remedies or traditional medicines, delaying their entry into formal healthcare systems. When they do seek professional help, it is often at a primary care level, where diagnostic capabilities for respiratory conditions are rudimentary at best. The Oxford Handbook of Respiratory Medicine provides a comprehensive overview of these conditions, but its detailed diagnostic algorithms are often impractical in settings lacking basic spirometry.

Understanding the Diagnostic Labyrinth

The diagnostic process for CRDs in resource-limited settings is a critical bottleneck. Spirometry, the gold standard for diagnosing COPD and assessing asthma control, is often unavailable or inaccessible. Where it exists, equipment may be poorly maintained, and personnel may lack adequate training to perform and interpret the tests correctly. This leads to a reliance on clinical symptom assessment, which, while important, is insufficient for precise diagnosis and phenotyping. Consequently, many patients receive a presumptive diagnosis based on symptoms alone, or are misdiagnosed with other conditions like tuberculosis, leading to inappropriate treatment and continued disease progression.

Patients may visit multiple healthcare providers, including traditional healers, pharmacists, and various levels of primary care, before encountering a clinician equipped to consider a CRD diagnosis. Each referral adds to the delay, increasing the likelihood of disease exacerbations and irreversible lung damage. The lack of integrated electronic health records means that patient histories are often fragmented, requiring repeated explanations of symptoms and prior treatments. This not only frustrates patients but also hinders accurate diagnostic progression, creating a cycle of delayed and incomplete care.

Challenges in Treatment and Management

Once a diagnosis is made, the challenges shift to treatment access and adherence. Essential medicines for CRDs, such as inhaled corticosteroids, long-acting bronchodilators, and combination therapies, may be unavailable, unaffordable, or inconsistently supplied. Generic versions, while cheaper, still represent a significant financial burden for many patients, particularly those in rural areas with limited income. The cold chain requirements for some inhaled medications also pose logistical hurdles in regions with unreliable electricity or inadequate infrastructure.

Beyond medication, comprehensive CRD management includes patient education, pulmonary rehabilitation, and smoking cessation support. These interventions are often non-existent or severely under-resourced. Patients may not understand the importance of adherence to inhaled therapies, the correct use of inhaler devices, or the benefits of lifestyle modifications. This knowledge gap contributes to poor disease control and frequent exacerbations. For instance, effective smoking cessation strategies are vital for preventing disease progression and improving quality of life for COPD patients, but access to counselling and pharmacotherapy is limited.

The Role of Primary Care and Community Engagement

Strengthening primary healthcare is paramount to improving CRD outcomes in resource-limited settings. Equipping primary care physicians and nurses with basic training in CRD diagnosis and management, including simplified spirometry interpretation and inhaler technique instruction, could significantly shorten the diagnostic delay. Community health workers also play a vital role in identifying symptomatic individuals, providing basic education, and facilitating referrals to appropriate care. Their presence can bridge the gap between the community and the formal healthcare system, fostering earlier engagement.

But training alone is insufficient without the necessary tools. Providing affordable, robust spirometers and ensuring a consistent supply of essential medications are fundamental. Telemedicine and digital health solutions offer avenues for specialist consultation and remote monitoring, particularly in geographically dispersed populations, by extending the reach of limited specialist expertise. These technologies can extend the reach of limited specialist expertise, offering support to primary care providers and directly to patients. The integration of CRD care into existing non-communicable

disease (NCD) programs, such as those for diabetes or hypertension, could also leverage existing infrastructure and resources, improving efficiency and patient access.

Systemic Barriers and Policy Implications

The patient journey for CRDs is deeply intertwined with broader systemic and policy issues. Lack of political will, insufficient healthcare budgets, and competing health priorities often relegate CRDs to a lower tier of importance compared to infectious diseases or maternal and child health. This underinvestment translates into a scarcity of trained personnel, inadequate infrastructure, and a fragmented supply chain for essential medicines and equipment. Policy frameworks that prioritize NCDs, including CRDs, are essential to drive resource allocation and integrate these conditions into national health strategies.

Even with policy changes, implementation remains a challenge. Corruption, inefficient procurement processes, and a lack of accountability can undermine well-intentioned initiatives. Sustainable funding mechanisms, potentially through international partnerships and innovative financing models, are critical for long-term improvements. Addressing the social determinants of health, such as poverty, education, and environmental exposures, is fundamental to reducing the incidence and severity of CRDs. For example, reducing exposure to indoor air pollution from biomass fuels requires multi-sectoral interventions beyond the healthcare system.

The Unmet Need for Integrated Care Models

The current fragmented approach to CRD care in many resource-limited settings means patients often fall through the cracks. An integrated care model, where primary care, secondary care, and community services work in concert, is the ideal. This model would ensure seamless transitions between different levels of care, consistent follow-up, and comprehensive support for patients. Such integration requires not only technological solutions, like shared electronic health records, but also a cultural shift towards collaborative practice among healthcare professionals.

Pulmonary rehabilitation programs, while resource-intensive, have demonstrated significant benefits in improving exercise capacity, reducing symptoms, and enhancing quality of life for CRD patients. Developing simplified, community-based rehabilitation programs that can be delivered by trained non-specialist health workers could make this vital intervention more accessible. Similarly, patient support groups and peer education initiatives can empower individuals to better manage their conditions and adhere to treatment plans. The ongoing discussion around optimising COPD outcomes with triple therapy highlights the need for a holistic approach, not just pharmacological interventions. The open-label nature of many observational studies in this area is an obvious caveat. Data collection in these settings is often opportunistic, relying on existing clinic records which may be incomplete or inconsistent. This makes it difficult to draw definitive conclusions about the true prevalence and incidence of CRDs, or the precise impact of specific interventions. But the qualitative insights from patient journey mapping remain invaluable, highlighting the lived experience of those navigating these complex systems. The lack of robust, prospective cohort studies powered to detect differences in long-term outcomes for specific interventions is a significant gap. Whether benefits observed in controlled settings extend to the broader, more challenging environments of LMICs remains unclear.

CLINICAL IMPLICATIONS

The fragmented patient journey for chronic respiratory diseases in resource-limited settings is not merely an inconvenience; it is a direct driver of preventable morbidity and mortality. Clinicians working in these environments must recognize that the diagnostic and therapeutic algorithms taught in textbooks often bear little resemblance to the reality on the ground. A pragmatic approach is essential, leveraging available resources and advocating for systemic improvements.

For healthcare systems, the imperative is clear: invest in primary care infrastructure, including basic diagnostic tools like spirometry, and ensure a consistent supply of essential inhaled medications. Training for non-specialist healthcare workers in CRD management is not a luxury but a necessity. Without these foundational elements, even the most advanced therapies remain out of reach for the majority of patients. The Paolo Chiesi Foundation's support for mapping these journeys highlights a critical unmet need. Understanding where patients get lost in the system is the first step towards designing effective, context-specific interventions. This is not about replicating Western healthcare models wholesale, but about developing sustainable, locally appropriate solutions that address the unique barriers faced by vulnerable populations.

Improving outcomes for CRD patients in resource-limited settings demands a multi-pronged strategy. It requires political will, sustained funding, robust training programs, and a commitment to integrated care models. Anything less will continue to leave millions struggling for breath, often in silence.

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