

Can a bacterial lysate curb recurrent respiratory infections?

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Recurrent respiratory tract infections (RTIs) represent a significant burden for both patients and healthcare systems, often leading to repeated antibiotic courses, missed work or school days, and a diminished quality of life. For many, the cycle of infection and recovery feels endless, prompting a search for prophylactic strategies beyond vaccination against specific pathogens.

One such strategy involves immunomodulators, agents designed to prime the immune system for a more robust response to common respiratory invaders. Broncho-Vaxom, a bacterial lysate, has been investigated for its potential to break this cycle of recurrent infections, offering a non-antibiotic approach to a pervasive clinical problem.

KEY TAKEAWAYS

- **The Pivot:** Broncho-Vaxom, a bacterial lysate, aims to reduce the incidence of recurrent RTIs by stimulating innate and adaptive immune responses.
- **The Data:** Clinical observations suggest a reduction in the number and duration of RTI episodes, alongside a decrease in antibiotic use.
- **The Action:** Consider Broncho-Vaxom as a prophylactic option for patients with recurrent RTIs who have exhausted other preventive measures.

Recurrent respiratory tract infections are a common presentation in primary care, particularly among children and adults with underlying conditions such as asthma, chronic obstructive pulmonary disease (COPD), or immunodeficiencies. The definition of 'recurrent' often varies, but generally implies multiple episodes within a short period, typically three or more bacterial or viral RTIs per year. These infections, while often self-limiting, contribute substantially to morbidity, healthcare costs, and the escalating problem of antimicrobial resistance due to frequent antibiotic prescriptions. The unmet need for effective, non-antibiotic prophylactic strategies is clear. Current standard of care focuses on managing acute episodes, identifying and treating underlying predisposing factors, and recommending vaccinations against influenza and pneumococcus. But for many patients, these measures are insufficient to prevent the frequent recurrence of infections. This persistent challenge has driven interest in immunomodulatory agents that can enhance the host's natural defenses.

How Broncho-Vaxom works

Broncho-Vaxom is an oral bacterial lysate, specifically a lyophilized preparation containing antigens from eight common bacterial species implicated in respiratory infections: *Haemophilus influenzae*, *Diplococcus pneumoniae*, *Klebsiella*

pneumoniae, *Klebsiella ozaenae*, *Staphylococcus aureus*, *Streptococcus pyogenes*, *Streptococcus viridans*, and *Neisseria catarrhalis*. The rationale behind its use is to expose the immune system to these bacterial components in a controlled manner, thereby stimulating a protective response without causing active infection. This mechanism is analogous to vaccination, but instead of targeting a single pathogen, it aims for a broader, non-specific immune enhancement. The proposed mechanism of action involves both innate and adaptive immune responses. Upon oral administration, the bacterial antigens are absorbed in the gut and processed by antigen-presenting cells, particularly dendritic cells and macrophages. This leads to the activation of T-lymphocytes and B-lymphocytes, resulting in the production of specific antibodies, including secretory IgA (sIgA) in the respiratory mucosa. Secretory IgA plays a vital role in mucosal immunity, acting as a first line of defense against pathogens entering the respiratory tract. Beyond specific antibody production, Broncho-Vaxom is also thought to stimulate innate immunity by enhancing phagocytic activity of macrophages and natural killer (NK) cell function, as well as increasing the production of various cytokines that orchestrate immune responses. This dual action aims to create a more vigilant and responsive immune system, capable of clearing pathogens more efficiently and reducing the likelihood of symptomatic infection.

Patient populations and administration

Broncho-Vaxom has been studied across various patient populations prone to recurrent RTIs. This includes children, a demographic particularly susceptible to frequent infections due to their developing immune systems and increased exposure in daycare or school settings. Adults with chronic respiratory diseases, such as COPD and chronic bronchitis, also represent a significant target group, as RTIs in these patients can lead to exacerbations, hospitalizations, and accelerated disease progression. Immunocompromised individuals, though often requiring more intensive prophylactic strategies, have also been considered for this type of immunomodulation.

The typical administration regimen involves a course of treatment for 10 consecutive days per month, repeated for three consecutive months. This intermittent dosing schedule is designed to provide a sustained immune stimulus. Some protocols also suggest booster courses during periods of increased risk, such as the autumn and winter months when respiratory viruses and bacteria are more prevalent. The oral route of administration offers convenience, which can improve patient adherence, a critical factor for any prophylactic therapy. The formulation is available in capsules, making it relatively easy to integrate into a patient's daily routine.

Clinical observations and outcomes

Clinical observations regarding Broncho-Vaxom generally point towards a reduction in the frequency and severity of recurrent RTIs. Patients receiving the treatment often report fewer episodes of bronchitis, pharyngitis, and rhinitis. This reduction in infection rate is often accompanied by a decrease in the duration of symptoms when infections do occur, suggesting a more effective immune response that shortens the course of illness. A key secondary outcome that has been consistently observed is a reduction in antibiotic consumption. Fewer infections, or less severe infections, translate directly into fewer prescriptions for antibiotics, which is a significant benefit in the context of global efforts to combat antimicrobial resistance. This effect is particularly important in primary care settings, where RTIs are a leading cause of antibiotic prescribing.

The impact extends beyond just the number of infections. Improved quality of life is a frequently reported benefit, as patients experience fewer days of illness, less disruption to work or school, and a general improvement in well-being.

For children, this can mean fewer absences from school and less parental stress. For adults with chronic conditions, it can mean fewer exacerbations and a more stable disease course. The overall safety profile of Broncho-Vaxom is generally considered favorable. Adverse events are typically mild and transient, primarily involving gastrointestinal disturbances such as nausea or abdominal discomfort, or occasional skin reactions. Serious adverse events are rare, making it a relatively well-tolerated option for long-term prophylactic use.

Where it falls short

Despite the encouraging clinical observations, the precise role of Broncho-Vaxom in routine clinical practice remains a subject of ongoing discussion. One challenge lies in the heterogeneity of recurrent RTI definitions and patient populations across various studies. This variability can make it difficult to compare results directly and establish a universally applicable efficacy profile. The underlying immune status of patients also varies widely; a patient with mild, self-limiting recurrent infections may respond differently than one with severe, complicated episodes linked to a primary immunodeficiency. This lack of precise stratification means that while the general trend is positive, predicting individual patient response can be challenging.

Another consideration is the lack of large-scale, independently funded trials with hard clinical endpoints, such as hospitalization rates or mortality, particularly in adult populations. Many studies are smaller, investigator-initiated, or supported by the manufacturer, which can introduce potential biases. While a reduction in antibiotic use is a valuable outcome, the primary endpoint of many studies remains the frequency of RTIs, which can be subjective and prone to recall bias in patient-reported outcomes. The long-term effects of repeated immune stimulation are also not fully elucidated, though current data do not suggest significant safety concerns. For clinicians seeking a comprehensive reference on respiratory conditions, the Oxford Handbook of Respiratory Medicine provides detailed guidance on managing chronic conditions and acute infections.

The mechanism of action, while plausible, is also complex and not entirely understood. The exact immune pathways activated and their relative contributions to protection against diverse pathogens are still areas of active research. This complexity means that while the concept of broad immune enhancement is appealing, the specific molecular events leading to clinical benefit are still being mapped out. The efficacy against viral infections, which constitute a significant proportion of RTIs, is less clear than its potential against bacterial pathogens. While some immune modulation may offer non-specific antiviral effects, direct evidence for a substantial reduction in viral RTI incidence is less robust than for bacterial ones.

The cost-effectiveness of Broncho-Vaxom is another practical consideration. While reducing antibiotic use and improving quality of life offer indirect economic benefits, the direct cost of the medication itself needs to be weighed against these advantages, especially in healthcare systems with constrained budgets. Reimbursement policies vary widely across European countries, influencing accessibility for patients. The question of who benefits most, and at what cost, is a critical one for healthcare policy makers and prescribers alike. The evidence, while generally positive, does not always provide the granular detail needed for precise patient selection or for robust health economic analyses.

CLINICAL IMPLICATIONS

For clinicians grappling with patients who cycle through recurrent respiratory infections, Broncho-Vaxom offers a non-antibiotic prophylactic option that warrants consideration. The observed reductions in infection frequency and antibiotic use are not trivial, especially in an era dominated by concerns about antimicrobial resistance. It provides an alternative when standard vaccination and lifestyle modifications prove insufficient. But clinicians should temper expectations. This is not a panacea for all recurrent RTIs. The evidence, while generally supportive, lacks the definitive, large-scale, independent trial data that often underpins widespread guideline recommendations. Patient selection remains key; those with clear, documented recurrent bacterial infections may see the most benefit, while those with primarily viral etiologies might experience less dramatic improvements.

The convenience of an oral regimen is a practical advantage, potentially improving adherence compared to injectables. But the cost and reimbursement market will undoubtedly influence its uptake. Prescribers should discuss the available data and the potential for modest but meaningful reductions in infection burden with patients, managing expectations about the extent of protection.

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