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PHARMACEUTICAL MANAGEMENT OF SARS , SYSTEMATIC TREATMENT OPTION AND COMMUNITY SAFETY INNOVATIONS FOR SARS AND FUTURE RESPIRATORY VIRUSES PREVENTIVE OPTION : A RESEARCH-BASED FRAMEWORK

Medical Science

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ABSTRACT

The resurgence of respiratory pandemics like SARS demands integrated treatment and safety frameworks to address both clinical and public health challenges. This review outlines evidence-based pharmacological therapies—leukotriene antagonists, bronchodilators, LABA/SABA, ICS, and combination regimens—while proposing digital, robotic, and drone-based community safety innovations. The paper offers an innovative strategy to control viral outbreaks, integrating drug protocols with smart hospital and public response systems.

KEYWORDS

1. INTRODUCTION

Respiratory viral infections such as SARS, MERS, and emerging coronaviruses have consistently overwhelmed global healthcare systems. Rapid transmission, delayed diagnosis, and insufficient safety infrastructure necessitate a two-pronged approach: pharmacological management and systemic public safety innovation. This paper provides a holistic model with treatment guidelines and community strategies using modern technology.

2. Systematic Pharmacological Management

2.1 Leukotriene Antagonists - Example: Montelukast

Used for airway inflammation, especially post-viral bronchial hyperreactivity

2.2 Bronchodilators- Examples: Salbutamol (SABA), Tiotropium (LAMA)

Alleviate acute bronchospasm

2.3 LABA and SABA

- LABA: Formoterol, Salmeterol
- SABA: Levalbuterol
- Used in stepwise management of persistent cough and airflow limitation

2.4 Inhaled Corticosteroids (ICS)- Budesonide, Fluticasone

Control chronic inflammation and reduce airway hypersensitivity

2.5 Combination Therapy- ICS + LABA: Budesonide + Formoterol

Indicated in moderate to severe cases, reducing hospitalization risk

2.6 Controlled Drug Options

- Antivirals: Remdesivir, Favipiravir
- Immunomodulators: Baricitinib, Tocilizumab
- Monoclonal antibodies for targeted therapy

3. Community Safety and Technological Innovations

3.1 Digitalization in Hospitals and Daycare Consultation

- AI-driven patient triaging
- Cloud-based patient monitoring
- Daycare e-consultations to minimize exposure in hospitals
- Remote oxygen saturation and fever tracking via mobile apps
- Promotion of Opening of Medical in Society Area durg should easily assible to very needy one .

3.2 Drone Technology in SARS Exposure or in Any Further Respirtor Virus Exposure

- Delivery of antiviral kits, oxygen cylinders, food, and PPE to high-risk zones
- Area surveillance and public announcement for containment protocols
- Rapid blood sample collection from quarantine zones

3.3 Robotic Disinfection and Automation

- UV-based robots for hospital and public area disinfection
- AI-powered robots for contactless patient service and waste disposal
- Automatic temperature scanners with facial recognition at building entrances

3.4 Smart Public Hygiene and Monitoring

- Voice-activated sanitizer dispensers in public spaces
- QR-based health entry passes for malls and transport
- Wearable air filtration masks with sensor feedback
- Antimicrobial nano-coating on door handles and lift buttons

3.5 Advanced Protective Equipment

- N95 and N100 respirators with embedded filter change sensors
- PAPRs (Powered Air-Purifying Respirators) for healthcare workers
- Integration of HEPA filters in domestic air conditioning
- Hepa Filter Mask Mask

3.6 Sanitization Standards

- 90% Ethanol and Dettol-based surface disinfection
- UV-C tunnel gates for crowded entry points
- Mobile disinfection units for slums and dense areas
- Adjunct Nasal and Oral Therapeutics in Respiratory Viral Management

3.6 Azelastine and Fluticasone Combination Nasal Spray

- Mechanism: Dual-acting formula with antihistaminic (azelastine) and anti-inflammatory corticosteroid (fluticasone) properties
- Controls allergic rhinitis symptoms triggered or worsened by viral exposure
- Reduces nasal congestion, sneezing, and rhinorrhea
- Useful in patients with post-viral rhinosinusitis or prolonged nasal inflammation
- Minimizes the use of systemic steroids in mild cases

3.7 Oxymetazoline and Xylometazoline Nasal Sprays

- Mechanism: Alpha-adrenergic agonists causing vasoconstriction
- Provide rapid relief from nasal obstruction and improve airflow
- Critical in acute management of upper airway blockage during early infection
- Should be limited to short-term use (≤5 days) to prevent rebound congestion (rhinitis medicamentosa)

3.8 Antibiotic and Antimicrobial Strategies (For Secondary Infections) Azithromycin (250 mg , (500 mg)

- Broad-spectrum macrolide with both antibacterial and moderate antiviral/immunomodulatory effects
- Prescribed to prevent or treat bacterial superinfections in respiratory viral diseases.
- Often used empirically in high-risk or elderly patients with secondary bronchitis or pneumonia

3.9 Levofloxacin (250mg , 500mg , 750mg)

- Potent fluoroquinolone antibiotic active against a wide range of respiratory pathogens
- Recommended in severe or hospital-acquired secondary bacterial

infections
- Monitored use due to risk of resistance and QT prolongation

4.0 Amoxicillin and Clavulanic Acid Combination
- First-line oral therapy for community-acquired secondary bacterial infections
- Effective in sinusitis, otitis media, or bronchitis following viral illnesses
- Clavulanic acid extends spectrum by inhibiting beta-lactamase-producing bacteria

4.1 Micronutrient Supportive Therapy
Zinc
- Essential trace element that enhances T-cell and immune function
- May reduce duration of cold-like symptoms and improve mucosal immunity
- Proposed antiviral properties in vitro against coronaviruses

Vitamin C (Ascorbic Acid)
- Potent antioxidant; modulates oxidative stress and supports neutrophil function
- Supplementation may reduce severity and duration of symptoms in viral upper respiratory tract infections
- Frequently used in adjunct protocols for immune reinforcement

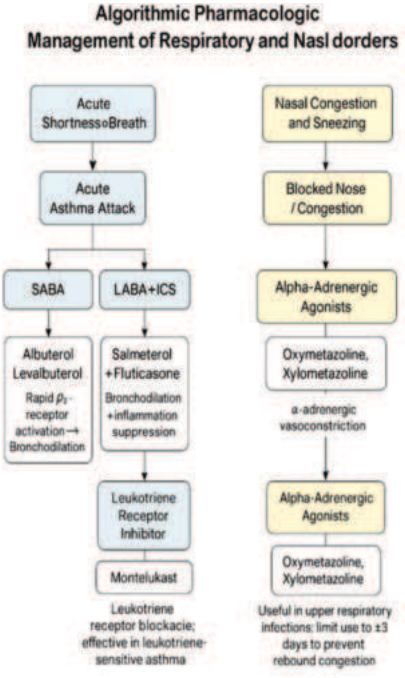
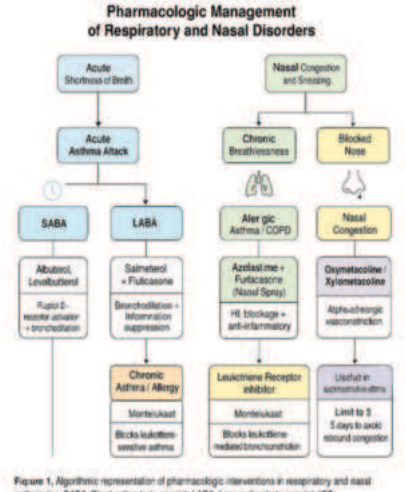


Figure 1, Algorithmic representatiotion of pharmacologic interventions in respiratory-and nasal pathologies. SABA – Short-acting beta agonist; LABA – Long-acting beta agonist; ICS – Inhaled corticosteroid; CCPD - Chronic obstructive pulmonary disease



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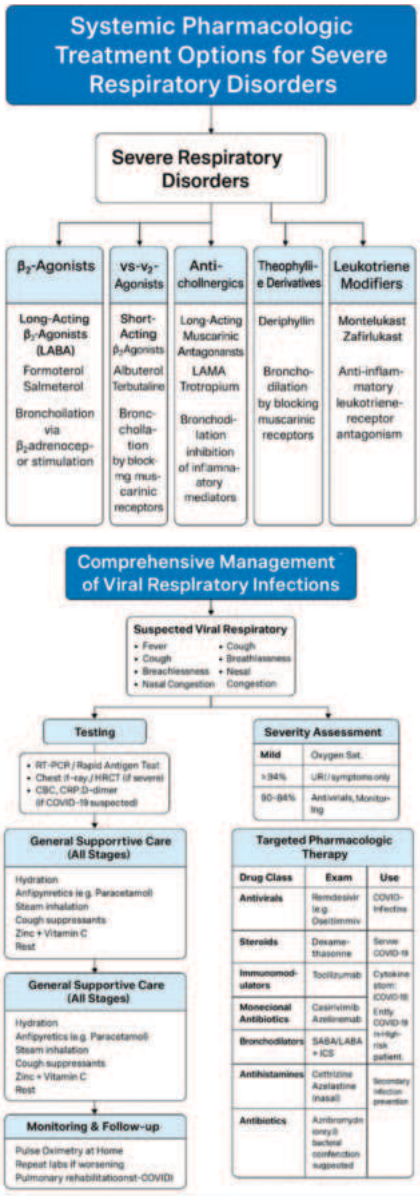

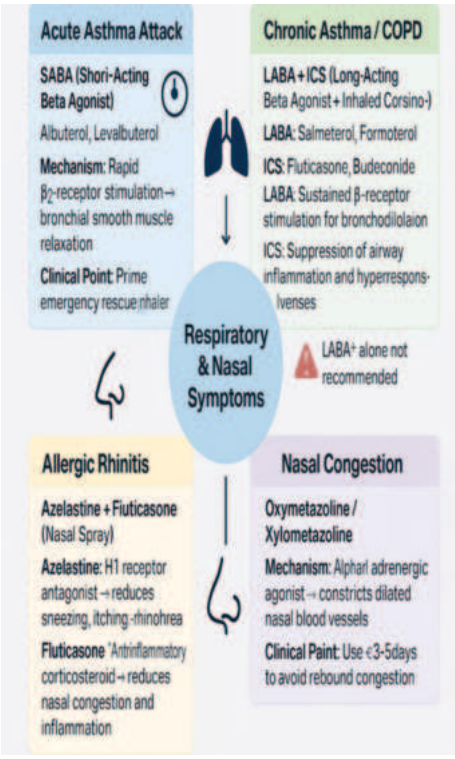

5. CONCLUSION

A unified approach involving modern pharmacology, robotic automation, and AI-based public health infrastructure can significantly reduce the impact of current and future respiratory viruses. Integration of digital healthcare systems, drones, and smart devices can bolster real-time disease containment and treatment delivery.

6. Recommendations and Future Scope

- Research into wearable diagnostic biosensors
- Home-based air quality detectors synced with municipal alerts
- Drone-assisted emergency healthcare drops
- National antiviral reserves with smart dispatch systems

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