



Inclusion Criteria

1. Aged ≥ 16 years
2. An acute and potentially reversible cause of ARF as determined by the treating physician
3. Receiving invasive mechanical ventilation via endotracheal tube or tracheostomy
4. Anticipated to remain on invasive mechanical ventilation for at least 48 hours
5. **Presence of secretions that are difficult to clear with usual airway clearance management (as assessed by the treating clinical team)**

Exclusion Criteria

1. Pre-existing chronic respiratory condition receiving routine use of any mucoactive
2. Mucoactive treatment started more than 24 hours prior to trial enrolment
3. Known adverse reaction to either study mucoactive
4. Treatment withdrawal expected within 24 hours
5. Known pregnancy
6. Previous enrolment in the MARCh trial
7. Declined consent
8. The treating clinician believes that participation in the trial would not be in the best interests of the patient