

Review Article

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Effects of the Cornet Device on Mucus Clearance: A Narrative Review

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ABSTRACT

Background: Impaired mucociliary clearance is a hallmark of chronic respiratory diseases such as cystic fibrosis (CF), non-CF bronchiectasis, and chronic obstructive pulmonary disease (COPD), leading to recurrent infection, airway damage, and reduced quality of life. The RC-Cornet (CEGLA Medizintechnik, Montabaur, Germany) is a handheld oscillating positive expiratory pressure (OPEP) device designed to mobilise and facilitate expectoration of bronchial secretions.

Objective: To critically appraise the design, proposed mechanism of action, and device-specific clinical evidence for the RC-Cornet, and to distinguish this evidence from that concerning oscillating PEP devices and airway clearance techniques (ACTs) more broadly.

Methods: A structured narrative review was conducted, following a pre-specified search strategy across PubMed/MEDLINE, Embase, the Cochrane Library, and Physiotherapy Evidence Database (PEDro), supplemented by hand-searching of reference lists and relevant clinical guidelines. Only peer-reviewed, indexed sources were used as primary evidence; non-scholarly and unindexed web sources were excluded.

Results: Device-specific evidence for the RC-Cornet consists predominantly of small randomised and crossover trials (mainly in COPD, from a single German research group), conference abstracts, and case reports, with no adequately powered, placebo-controlled trial isolating hard clinical outcomes. The device appears to reduce airway resistance and improve markers of sputum mobilisation acutely, and one small trial suggests it may enhance the bronchodilating effect of nebulised ipratropium bromide, but confirmatory replication is lacking.

Conclusion: The RC-Cornet is a plausible, low-cost, portable adjunct for airway clearance in patients with hypersecretory respiratory disease. However, the evidence base specific to this device remains limited in volume, methodological rigour, and generalisability. Claims of efficacy, safety, cost-effectiveness, and bronchodilator synergy should be regarded as hypothesis-generating rather than established, pending larger, adequately powered, and ideally sham-controlled trials with clinically meaningful endpoints.

Keywords: RC-Cornet; Oscillating Positive Expiratory Pressure; Airway Clearance Technique; Mucus Clearance; Bronchiectasis; Chronic Obstructive Pulmonary Disease; Cystic Fibrosis

INTRODUCTION

Effective clearance of airway secretions is essential for pulmonary hygiene and the prevention of infection. In chronic respiratory conditions such as cystic fibrosis (CF), non-CF bronchiectasis, and chronic obstructive pulmonary disease (COPD), impaired mucociliary transport leads to mucus retention, airway obstruction, recurrent

exacerbations, and progressive lung damage.^[1,2] Airway clearance techniques (ACTs) — including manual chest physiotherapy, postural drainage, the active cycle of breathing technique (ACBT), high-frequency chest wall oscillation, and positive expiratory pressure (PEP) devices — are recommended as a cornerstone of respiratory care

for patients with chronic productive cough and radiologically evident mucus plugging^[3,4,5] although a 2015 Cochrane review of ACTs in bronchiectasis concluded that the overall quality of the underlying trial evidence is low, with small sample sizes and heterogeneous outcome reporting across the field.^[6]

The RC-Cornet, commonly referred to simply as the “Cornet” or “Cornet device,” is a handheld oscillating positive expiratory pressure (OPEP) device used as an instrumental ACT. Unlike vibratory devices that use a moving internal component such as a steel ball (Flutter) or cone (Acapella), the Cornet generates oscillations through the movement of a curved internal pipe housed within a hard outer shell as the patient exhales through a mouthpiece.^[7] Variants of the device have been developed for nasal use (RC-Cornet PLUS NASAL) and for tracheostomised patients (RC-Cornet PLUS Tracheo), extending its intended use beyond the lower airways.

This review differs from prior descriptive summaries of the Cornet device in three respects. First, it applies an explicit, reproducible literature-search strategy (Section 2). Second, it separates evidence generated using the RC-Cornet itself from evidence generated with other OPEP devices (Flutter, Acapella, Quake, VRP1, T-PEP) or with ACTs in general, a distinction that is frequently blurred in earlier narrative accounts of this device. Third, it appraises the methodological quality and clinical applicability of the identified Cornet-specific studies rather than simply describing their conclusions, and it adds dedicated sections on safety/patient selection and on comparative positioning relative to other airway-clearance modalities.

METHODS

Literature Search Strategy

This is a narrative (non-systematic) review; its reporting follows the general structure recommended for narrative reviews by the SANRA (Scale for the Assessment of Narrative Review Articles) framework, including an explicit account of the search strategy and a statement of scope and limitations.^[9]

Databases and dates searched:

PubMed/MEDLINE, Embase, the Cochrane Central Register of Controlled Trials (CENTRAL), and the Physiotherapy Evidence Database (PEDro) were

searched from database inception to August 2026. Reference lists of retrieved articles, relevant clinical practice guidelines (British Thoracic Society, European Respiratory Society), and Cochrane systematic reviews on airway clearance were hand-searched to identify additional eligible studies not captured by the electronic search (a snowballing approach).

Search terms: Combinations of the following terms were used, adapted to each database’s syntax and controlled vocabulary (e.g. MeSH): (“Cornet” OR “RC-Cornet” OR “CEGLA”) AND (“oscillating positive expiratory pressure” OR “OPEP” OR “positive expiratory pressure” OR “airway clearance technique*” OR “chest physiotherapy”) AND (“mucus clearance” OR “sputum” OR “bronchiectasis” OR “chronic obstructive pulmonary disease” OR “cystic fibrosis”). No language restriction was applied a priori, given that a substantial proportion of the primary literature on this device was published in German; non-English records were assessed via translated abstracts and, where full text was unavailable, via secondary citation in English-language sources.

Inclusion criteria: (i) peer-reviewed original research (randomised or non-randomised controlled trials, crossover studies, cohort studies, case series/reports) evaluating the RC-Cornet or RC-Cornet PLUS device in humans; (ii) peer-reviewed comparative studies evaluating the Cornet against another airway-clearance modality; (iii) peer-reviewed systematic reviews, meta-analyses, and clinical practice guidelines addressing OPEP devices or ACTs generally, used to provide comparative and mechanistic context rather than as device-specific evidence.

Exclusion criteria: Non-peer-reviewed sources (manufacturer marketing material, general encyclopaedic or crowd-sourced websites, non-indexed clinical blogs) were excluded as primary evidence. In vitro bench studies not involving human participants were noted for mechanistic context only and are flagged explicitly as such. Conference abstracts lacking a subsequently published full-text article were retained only where no full-text alternative existed, and are explicitly labelled as abstract-level evidence with correspondingly limited weight in the synthesis.

Study selection: Titles and abstracts were screened for relevance to the RC-Cornet device or to airway

clearance more broadly; full texts of potentially eligible records were then assessed against the criteria above. Because of the small and heterogeneous evidence base (a mixture of randomised trials, abstracts, and case reports spanning nearly three decades), formal risk-of-bias scoring (e.g. Cochrane RoB2) was not applied uniformly; instead, each Cornet-specific study is appraised narratively in Section 4 and summarised in the evidence table (Table 1), with explicit attention to sample size, comparator, blinding feasibility, and outcome type (surrogate/physiological vs patient-centred vs hard clinical outcome).

Device Description and Mechanism of Action

The Cornet combines PEP with oscillatory vibration to help loosen retained sputum so that it can be expectorated more easily. During use, the patient breathes out through a curved plastic tube connected to a flexible hose; the resulting airflow causes the internal pipe to oscillate, generating vibrations transmitted retrograde into the airways. This creates intermittent resistance to expiration, proposed to help splint open the airways, allow air to move behind retained secretions through collateral ventilation pathways, and alter the viscoelastic properties of mucus, promoting movement toward the central airways for expectoration or coughing.^[7]

The device allows adjustment of the resistance/pressure setting by rotating the mouthpiece, enabling the treating clinician to individualise the level of PEP delivered according to disease severity and tolerance. As with PEP therapy generally, the reported physiological effects of oscillatory PEP are attributed to a combination of mechanisms — variations in pulmonary volumes and pressures, changes in expiratory flow bias, the influence of gravity, and direct mechanical (vibratory) effects on secretions — rather than to a single isolated mechanism, and the relative contribution of each mechanism has not been established specifically for the Cornet.^[7] It is important to note that most controlled physiological data on these proposed mechanisms (e.g. flow bias, collateral ventilation, mucus rheology) derive from PEP and OPEP research generally, and in several instances from other named devices (Flutter, VRP1), rather than from the RC-Cornet itself; where this is the case it is flagged explicitly in Section 4.

Clinical Evidence on Mucus Clearance

This section is organised by disease population. For each population, RC-Cornet-specific findings are presented first and distinguished explicitly from evidence generated with other OPEP devices or with ACTs in general, which is presented separately for context. A consolidated appraisal of study design, population, comparator, outcomes, and limitations for the Cornet-specific studies is provided in *Table 1*.

Bronchiectasis

Cornet-specific evidence: Three Cornet-specific sources were identified in bronchiectasis. A pilot randomised crossover study (n small; exact sample not separately verifiable from the abstract-level source) compared the Acapella and RC-Cornet devices and found comparable improvements in sputum clearance and pulmonary function, without establishing superiority of either device.^[11] A second randomised crossover trial compared the Quake device with the RC-Cornet and similarly found broadly comparable effects on sputum weight and oxygen saturation between the two devices^[12]. Both studies were small, single-centre, and reported short-term or single-session outcomes, limiting inference about sustained clinical benefit. More recently, a single case report described the use of the RC-Cornet PLUS, combined with active cycle of breathing technique and, in a later phase, inspiratory muscle training, within a broader multimodal pulmonary rehabilitation programme in an adult with bronchiectasis and concurrent asthma presenting with an acute exacerbation; improvements were documented across dyspnoea, cough-related quality of life, six-minute walk distance, and WHO quality-of-life scores over six weeks.^[10] As a single case report with multiple concurrent co-interventions and no control condition, this source provides descriptive rather than controlled evidence, and the improvement cannot be attributed to the Cornet device in isolation.

Broader OPEP/ACT evidence (not Cornet-specific). For context, comparative trials of other oscillatory PEP and airway-clearance modalities in bronchiectasis have generally found no clear superiority of one instrumental ACT over another. A randomised crossover study of the Flutter device versus the active cycle of breathing technique in non-CF bronchiectasis found no significant difference in sputum weight, health status, or lung

function between the two approaches, with patients subjectively preferring the Flutter for routine use.^[13] A separate randomised crossover comparison of the Flutter and the Lung Flute in non-CF bronchiectasis likewise found both devices effective and well tolerated, with most participants preferring the Flutter for speed and ease of use.^[14] Current clinical guidelines (British Thoracic Society 2019; European Respiratory Society 2017) recommend that ACBT or an oscillating PEP device be offered to individuals with bronchiectasis, without naming a specific preferred instrumental device, reflecting the absence of device-level comparative superiority data across the OPEP class as a whole.^[15,16] None of these guideline recommendations, or the Flutter/Lung Flute comparative trials cited above, constitute direct evidence for the RC-Cornet; they are presented here to contextualise the strength (or otherwise) of the wider OPEP evidence base within which Cornet-specific findings sit.

Chronic Obstructive Pulmonary Disease (COPD)

Cornet-specific evidence: The most substantial body of RC-Cornet-specific clinical research was conducted in COPD, predominantly by a single German research group (Cegla and colleagues) between 1997 and 2002, and is summarised in Table 1. A randomised prospective study of 90 patients with severe COPD and tracheobronchial instability compared the RC-Cornet with another oscillating PEP system (VRP1 Desitin) and with drug therapy alone; the RC-Cornet group showed a statistically significant reduction in residual volume compared with VRP1 over a one-week observation period.^[8] A subsequent two-year randomised prospective trial in 50 patients with severe COPD compared drug therapy alone with drug therapy plus regular RC-Cornet use (combined-PEP position, three times daily); the Cornet group showed significant improvements in trapped gas volume, airway resistance, and vital capacity relative to the drug-only group — the longest follow-up identified for any Cornet-specific trial, though the study remained single-centre and did not report exacerbation frequency or hospitalisation as endpoints.^[19]

A separate randomised crossover study specifically evaluated the RC-Cornet's effect on nebulised bronchodilator delivery: in 35 patients with severe COPD and tracheobronchial instability, ipratropium bromide nebulised with the RC-Cornet positioned in the expiratory limb of the nebuliser produced a significantly greater bronchodilator response

(reduction in airway resistance and increases in vital capacity and FEV1) than conventional nebulization.^[17] A mechanistic follow-up study using radiolabelled aerosol deposition found no difference in the regional (central versus peripheral) pattern of aerosol deposition between the two nebulization methods, leading the authors to conclude that the enhanced bronchodilator effect was more likely attributable to Cornet-induced changes in mucus transport than to improved drug deposition per se.^[18] This distinction is important: it indicates the observed synergy is a plausible, mechanistically explained physiological finding from a single research group rather than an established, independently replicated clinical benefit, and it has not, to our knowledge, been tested against a sham-oscillation control or replicated by an independent research group.

A separately reported short-term study (available in abstract form only) found that RC-Cornet use reduced sputum cohesiveness in COPD patients.^[20] As a conference abstract without a subsequently identified full-text publication, this finding should be regarded as preliminary.

Cystic Fibrosis and Other Hypersecretory Conditions

Cornet-specific evidence: Device-specific evidence for the Cornet in CF is sparse and consists of two conference abstracts comparing sputum rheology/cohesiveness after Cornet versus Flutter therapy - one in CF sputum^[21] and one in sputum from patients with bronchiectasis^[22], neither of which appears to have been published subsequently as a full peer-reviewed article. Both abstracts reported reductions in sputum cohesiveness with both devices, without consistently establishing superiority of the Cornet over the Flutter. Given the abstract-only status of this evidence, firm conclusions about the Cornet's comparative efficacy in CF cannot be drawn.

Broader OPEP evidence in CF (not Cornet-specific). The Cornet is frequently listed among the range of oscillatory and non-oscillatory PEP devices used in CF airway-clearance protocols (alongside the Flutter, Acapella, Aerobika, and TheraPEP)^[24], reflecting its place within the broader family of instrumental ACT devices rather than device-specific trial evidence. A published randomised, controlled, crossover trial comparing the Flutter with autogenic drainage in CF found that sputum

viscoelasticity was significantly lower after Flutter therapy, predicting improved mucociliary and cough clearability^[23] — direct evidence for the Flutter, not the Cornet, but relevant for understanding the class-level mechanism proposed to apply to oscillatory PEP devices including the Cornet. Nasal and tracheostomy-specific Cornet variants (RC-Cornet PLUS NASAL and RC-Cornet PLUS Tracheo) are intended to extend the proposed clearance benefit to the nasopharyngeal space and to tracheostomised patients respectively; we did not identify controlled clinical trial evidence specific to either variant, and

this should be regarded as an unstudied extrapolation from the standard device rather than an evidence-based indication.

Evidence Summary Table

Table 1 summarises the RC-Cornet-specific studies identified through the search strategy described in Section 2, including study design, population, intervention/comparator, key outcomes, key findings, and principal limitations. Reference numbers correspond to the numbered reference list.

Table 1. Summary of RC-Cornet-specific clinical studies identified in this review.

Study (design)	Population	Intervention / Comparator	Key outcome(s)	Key finding	Main limitations
Cegla & Retzow, 1997 [8] (RCT, parallel, n=90)	Severe COPD with tracheobronchial instability	RC-Cornet vs VRP1 Desitin vs drug therapy alone	Lung function, dyspnoea/cough/sputum VAS	RC-Cornet associated with significantly greater reduction in residual volume vs VRP1; both oscillatory devices tolerated	Short follow-up (7 days); German-language, single-centre; outcome scales not fully validated
Cegla et al., 2001 [17] (RCT, crossover, n=35)	Severe COPD with tracheobronchial instability	Ipratropium bromide nebulised via RC-Cornet (Position 1) in expiratory limb vs conventional nebulisation	Airway resistance, vital capacity, FEV1 (body plethysmography)	Significantly greater bronchodilation with RC-Cornet-assisted nebulisation ($p<0.02$ for all outcomes)	Small sample; acute physiological endpoints only; no patient-reported or long-term outcomes
Haidl et al., 2002 [18] (RCT, mechanistic, n not stated in abstract)	Stable COPD	Ipratropium bromide nebulised with vs without RC-Cornet in expiratory limb	Radiolabelled aerosol deposition (central vs peripheral)	No difference in aerosol deposition pattern between groups; benefit attributed to mucus transport, not enhanced drug deposition	Mechanistic/exploratory study; does not address clinical outcomes
Cegla et al., 2002 [19] (RCT, parallel, n=50, 2-year follow-up)	Severe COPD (post-exacerbation, ex-smokers)	Drug therapy alone vs drug therapy + RC-Cornet (combined-PEP position) 3×/day	Lung function, symptom scores over 2 years	Cornet group showed significant improvement in trapped gas volume, airway resistance, and vital capacity vs drug-only group	Longest RC-Cornet trial identified, but single-centre; blinding not feasible for a physical device; limited reporting of hard outcomes (exacerbations, hospitalisation)
King et al., 1998 [20] (comparative, abstract only)	COPD	RC-Cornet	Sputum cohesiveness (rheology)	Short-term reduction in sputum cohesiveness reported	Conference abstract only; no peer-reviewed full text identified; methodological detail unavailable
Dasgupta et al., 1997 [21];	Cystic fibrosis;	Cornet vs Flutter	Sputum cohesiveness/rheology	Both devices reduced sputum cohesiveness; comparative	Conference abstracts only; not peer-

Nakamura et al., 1998 [22] (comparative, abstracts only)	bronchiectasis			superiority not consistently established	reviewed full articles; small samples
Shabari & Alaparthi, 2011 [11] (pilot RCT/crossover)	Bronchiectasis	Acapella vs RC-Cornet	Sputum wet weight, pulmonary function, dyspnoea	Both devices improved sputum clearance; no clear superiority of one device	Pilot study; small sample; single-centre; short duration
Amit et al., 2012 [12] (randomised crossover)	Bronchiectasis	Quake vs RC-Cornet	Sputum weight, oxygen saturation, pulmonary function	Comparable airway-clearance effects between devices	Small sample; single-session/short-term outcomes; limited generalisability
Solanke & Lalwani, 2025 [10] (single case report)	Bronchiectasis with concurrent asthma, acute exacerbation	RC-Cornet PLUS + ACBT, later + inspiratory muscle training, within multimodal pulmonary rehabilitation	MMRC, Leicester Cough Questionnaire, 6MWT, WHO-QOL	Improvement in all outcomes over 6 weeks	Single patient; multiple concurrent interventions preclude attribution of effect to the Cornet device specifically; no control condition

Comparative Discussion: The Cornet Relative to Other Airway Clearance Techniques and OPEP Devices

Mechanistically, the Cornet belongs to the oscillating PEP subclass of instrumental ACTs, alongside the Flutter (gravity-dependent steel-ball mechanism), the Acapella and Aerobika (gravity-independent magnet/flap mechanisms), and the Quake and VRP1 (alternative oscillating-pipe or flap designs).^[7,24] Within this subclass, the limited head-to-head data available — comparing the Cornet against the Acapella^[11] and against the Quake^[12] in bronchiectasis, and against the VRP1 in COPD^[8] — have generally found comparable rather than clearly superior performance for the Cornet, a pattern that mirrors comparative trials between other OPEP devices (e.g. Flutter vs Lung Flute^[14]) and is consistent with the position taken in current bronchiectasis guidelines, which recommend the OPEP class as a therapeutic option without endorsing a specific device.^[15,16]

Relative to non-instrumental ACTs such as the active cycle of breathing technique, manual chest physiotherapy, and postural drainage, oscillating PEP devices including the Cornet offer practical advantages: they are self-administered, do not

require a trained assistant for every session, are position-independent (unlike postural drainage, which may be contraindicated or poorly tolerated in some patients), and provide direct patient feedback via palpable/audible oscillation, which may support adherence.^[4,5,7] However, a randomised crossover trial of the Flutter versus ACBT in bronchiectasis found no significant difference in sputum clearance outcomes between an instrumental OPEP device and a well-taught manual technique,^[13] and the 2015 Cochrane review of ACTs in bronchiectasis concluded that no single technique, instrumental or manual, has been shown to be reliably superior to another for hard clinical outcomes, with most trials underpowered for endpoints such as exacerbation frequency or lung function decline.^[6] On the available evidence, therefore, the Cornet should be positioned as one reasonable option within a class of broadly interchangeable instrumental ACTs, with device selection guided principally by patient preference, tolerance, dexterity, and ease of use rather than by demonstrated comparative clinical superiority.^[11,12,24]

For COPD specifically, the Cornet has a somewhat more developed (though still limited and largely single-group) evidence base than most other individual OPEP devices, including data on long-

term use ^[19] and on a specific bronchodilator-synergy mechanism ^[17,18] not replicated for other named OPEP devices in the literature identified. This is a genuine, if narrow, point of distinction; it should not, however, be over-interpreted as demonstrating overall superiority of the Cornet over other OPEP devices for COPD, since no direct randomised comparison between the Cornet and another OPEP device in COPD (analogous to the bronchiectasis comparisons described above) was identified in this review.

Safety, Contraindications, and Practical Considerations

Positive expiratory pressure techniques, including oscillating PEP devices such as the Cornet, are generally regarded as low-risk interventions. In a widely cited review of the physiology and clinical applications of PEP, the only absolute contraindication described in the literature is an undrained pneumothorax, and dizziness (probably related to hyperventilation during treatment) is the most commonly reported adverse effect; no barotrauma has been reported despite extensive clinical use, even at the substantially higher pressures used in high-pressure PEP protocols.^[7] More general reviews of chest physiotherapy and airway clearance techniques additionally list a set of relative contraindications and precautions that are not specific to the Cornet but are relevant to its use as an OPEP device: haemodynamic instability or severe cardiovascular disease, active or recent haemoptysis, undrained or recently drained pneumothorax, recent thoracic, oesophageal, or upper airway/facial surgery, raised intracranial pressure, untreated tympanic membrane or middle-ear pathology (relevant given the pressure transmitted to the Eustachian tube), acute sinusitis, severe osteoporosis or rib fracture where associated manual techniques are combined with the device, and inability to tolerate the associated increase in work of breathing (for example, during an acute severe asthma or COPD exacerbation).^[3,4,7]

No RC-Cornet-specific adverse-event data beyond these general PEP/OPEP considerations were identified in this review; none of the Cornet-specific trials summarised in Table 1 reported serious device-related adverse events, though systematic adverse-event ascertainment and reporting were not described in most of the available sources, and this should be regarded as a gap in the device-specific

evidence base rather than as evidence of safety per se.

Patient selection and practical considerations.

Based on the mechanism of action and the general PEP contraindications above, the Cornet is most plausibly suited to patients with a productive cough and difficulty expectorating retained secretions (bronchiectasis, COPD with chronic bronchitis, CF, and other hypersecretory conditions) who can generate an adequate expiratory flow and to cooperate with the breathing manoeuvre, and in whom the relative contraindications listed above have been excluded or addressed. Patients with severe air-flow obstruction, marked dynamic hyperinflation, or fatigue may find the added expiratory resistance poorly tolerated, and the resistance/pressure setting should be individualised and reviewed by a clinician trained in the technique, as recommended for OPEP devices generally.^[3,4,7] Because most of the identified clinical evidence derives from adults with COPD or bronchiectasis, extrapolation to children, to patients with primary ciliary dyskinesia, or to the nasal and tracheostomy-specific variants of the device should be regarded as an unstudied extrapolation rather than an evidence-based indication, pending dedicated trials in these populations.

DISCUSSION

Taken together, the available literature indicates that the RC-Cornet can facilitate expectoration of retained airway secretions through the combined effect of positive expiratory pressure and oscillatory vibration, a mechanism broadly consistent with that proposed for the OPEP class as a whole.^[7,17,18] The device-specific evidence, summarised in Table 1, is more substantial for COPD than for bronchiectasis or CF, and includes several randomised or crossover trials from a single German research group spanning 1997–2002, together with more recent, methodologically weaker case-report and small-crossover evidence in bronchiectasis.^[8,10,11,12,17,18,19,20]

Several limitations of this evidence base warrant explicit, critical comment rather than descriptive summary alone. First, sample sizes in the identified Cornet-specific trials are small (ranging from single-case to 90 participants), and none is adequately powered for hard clinical outcomes such as exacerbation frequency, hospitalisation, or long-term lung function decline; most report surrogate

physiological endpoints (airway resistance, residual volume, sputum cohesiveness) rather than patient-centred or clinical outcomes.^[8,17,18,19,20] Second, a substantial proportion of the device-specific literature originates from a single research group and a small number of German-language journals, raising the possibility of publication bias, limited independent replication, and constrained generalisability to other healthcare settings and populations; we did not identify any Cornet-specific trial conducted outside this group with the exception of the more recent bronchiectasis comparative and case-report studies.^[10,11,12] Third, none of the identified controlled trials used a sham-oscillation or placebo device as a comparator, which is methodologically difficult given the tactile and audible feedback inherent to the device, but which means that a specific contribution of oscillation (beyond PEP alone, or beyond the non-specific effects of supervised breathing exercises) cannot be firmly isolated for the Cornet specifically. Fourth, several potentially informative comparative findings (sputum cohesiveness versus the Flutter in CF and bronchiectasis) exist only as conference abstracts without full peer-reviewed publication, and should be weighted accordingly.^[20,21,22] Fifth, outcomes are likely to be influenced by patient adherence, correct technique, and individualisation of the resistance setting, none of which are easily standardised or consistently reported across the available studies.^[7]

The finding that RC-Cornet-assisted nebulisation improved the bronchodilator response to ipratropium bromide is mechanistically interesting and biologically plausible (via improved secretion clearance rather than enhanced central aerosol deposition^[18]), but it derives from a single small crossover trial from one research group^[17] and has not, to our knowledge, been independently replicated; it should therefore be regarded as a hypothesis-generating finding rather than an established basis for combining Cornet therapy with nebulised bronchodilators in routine practice. Similarly, while the device is inexpensive, portable, reusable, and does not require electricity — practical attributes that plausibly support long-term adherence and self-administration — we did not identify any published formal cost-effectiveness analysis of the RC-Cornet, and claims of cost-effectiveness in prior descriptive accounts of this device should accordingly be regarded as an inference from its low unit cost and reusability rather than as evidence from an economic evaluation.

This pattern — device-specific research consisting largely of small trials, abstracts, and case reports, situated within a much larger and more rigorously synthesised literature on ACTs and OPEP devices in general — mirrors a broader pattern across individual airway-clearance devices, where guideline recommendations are frequently based on device-class-level, low-certainty evidence rather than device-specific high-certainty trials.^[6,15,16] This is not a criticism unique to the Cornet; it reflects the general difficulty of conducting large, blinded, long-term trials of physical airway-clearance devices, and is consistent with the Cochrane reviewers' conclusion that the comparative evidence for individual ACTs and OPEP devices remains, across the field, of low overall certainty.^[6]

CONCLUSION

The RC-Cornet is an oscillating positive expiratory pressure device used to assist mucus clearance in patients with bronchiectasis, COPD, cystic fibrosis, and other hypersecretory respiratory conditions, with dedicated variants for nasal and tracheostomy use. Device-specific clinical evidence, most developed for COPD and comprising mainly small trials from a single research group together with more recent, methodologically weaker bronchiectasis studies, suggests that the Cornet can improve short-term physiological markers of airway resistance and secretion mobilisation, and may enhance the acute bronchodilator response to nebulised ipratropium bromide. This evidence, however, is limited in volume, has not been independently replicated on the whole, lacks sham-controlled trials, and does not extend to hard clinical outcomes such as exacerbation frequency or long-term lung function. On the currently available evidence, the Cornet can reasonably be considered a safe, low-cost, and practical option within the broader OPEP device class, to be selected largely on the basis of patient preference and tolerability rather than demonstrated comparative superiority; claims of efficacy, safety, cost-effectiveness, and bronchodilator synergy beyond this should be expressed cautiously pending larger, adequately powered, ideally sham-controlled, multicenter trials with clinically meaningful and patient-centred endpoints, and pending formal safety surveillance and economic evaluation specific to this device.

Ethics statement: This is a narrative literature review and did not involve the collection of new

primary data from human or animal subjects; no ethics committee approval was required.

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Author contribution: T.S. Muthukumar was solely responsible for the conception, literature search, critical appraisal, drafting, and final approval of this manuscript.

Data availability: No new datasets were generated or analysed during the preparation of this review. All sources cited are publicly available through the databases described in Section 2.

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