Case Series

From passive to active: Clinical reasoning in acute care chest physiotherapy

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Abstract

Background: Physiotherapy in acute care is often perceived as protocol-driven and limited to passive techniques. This case series illustrates how clinical reasoning informs individualized practice by tailoring interventions to patient-specific needs. Six patients with poor cough effort were initially managed with passive chest physiotherapy, which proved insufficient. Guided by jones' clinical reasoning strategies and a client-centred approach, active expiratory training was introduced. Peak Expiratory Flow Rate (PEFR) was quantified pre- and post-intervention using a handheld peak flow meter, providing objective evidence of cough effectiveness. Interventions were delivered twice daily for 3–5 days, including supported coughing, huffing, breathing control, and incentive spirometry. Across cases, PEFR improved by 70–130 l/min, with patients achieving protective coughing and airway clearance within days. Clinical observation confirmed secretion clearance, while patients reported increased confidence and comfort with active participation. These findings demonstrate that even frail or post-surgical patients can benefit from carefully graded active strategies. This series highlights the essential role of physiotherapists in acute care hospital settings, emphasizing individualized reasoning as critical for optimizing outcomes and strengthening the evidence base for reasoning-driven care.

Key words: Physiotherapy; Peak Expiratory Flow Rate (PEFR); Laparotomy

1. Methods

Design: Case series of six patients in acute care settings.

Assessment: Baseline cough effort assessed subjectively and quantified using peak expiratory Flow rate (PEFR) with a handheld peak flow meter.

Intervention: Transition from passive techniques (percussion, vibration) to active expiratory strategies (supported coughing, huffing, breathing control, incentive spirometry).

Outcome measures

- PEFR (l/min) pre- and post-intervention.
- Clinical observation of secretion clearance.
- Patient-reported confidence and comfort.

Ethics and consent

Written informed consent was obtained from all patients for participation and publication of anonymized data. Institutional approval was not required for this case series, as per Kauvery hospital policy on clinical reporting [1,2].

2. Case series

Case	Patient profile	Passive approach outcome	Active strategy	PEFR pre(l/min)	PEFR post (l/min)	Clinical outcome
1	90 years old male, post-cholecystectomy, immobile	Poor clearance, weak cough	Supported huffing, upright positioning	80	160	Effective cough, reduced complications
2	72 years old male, post-CABG	Minimal sputum clearance	Pillow-splinted huffing	100	220	Protective cough, reduced atelectasis
3	65 years old female, MCA stroke	Passive vibration ineffective	Assisted huffing, therapist cueing	70	150	Audible cough, reduced aspiration risk
4	58 years old female, post-laparotomy	Avoided pain, poor airway protection	Splinted coughing, reassurance	90	200	Effective cough, prevented pulmonary complications
5	82 years old male, pneumonia, bedridden	Transient relief only	Breathing control, upright mobilization	60	140	Consistent cough, improved oxygenation

6	45 years old male, Post femur surgery	Weak cough, risk of pneumonia	Bed-supported huffing, incentive spirometry	110	240	Protective cough, preventing secondary complications

3. Results

- PEFR improvement: across cases, PEFR increased by 70–130 l/min after active expiratory training.
- Clinical outcomes: all patients achieved protective cough within 3–5 days, with improved secretion clearance and reduced risk of complications.
- Patient empowerment: patients reported greater confidence and comfort with active participation. [4,5].

4. Discussion

This case series demonstrates that passive physiotherapy alone is insufficient in acute care chest management. Clinical reasoning guided the transition to active expiratory strategies, balancing safety with patient empowerment. Quantified PEFR provided objective evidence of improved cough effectiveness.[3]. Jones's reasoning frameworks is hypothetico-deductive, narrative, procedural, interactive, and collaborative were consistently applied to tailor interventions. The findings reinforce that even frail or post-surgical patients can benefit from carefully graded active participation.

5. Conclusion

Encouraging expiratory effort restored protective cough across diverse patient contexts, reduced complications, and elevated the visibility of physiotherapy in corporate hospital settings. Quantified PEFR outcomes strengthen the evidence base for reasoning-driven care. For budding physiotherapists, this series emphasizes that "one size doesn't fit all" and that individualized reasoning transforms outcomes.

6. Key messages

- Passive techniques alone are insufficient in acute care chest physiotherapy.
- Active expiratory training significantly improves PEFR and cough effectiveness.
- Clinical reasoning frameworks guide safe, individualized interventions.
- Patient empowerment and dignity are central to effective physiotherapy.
- Physiotherapy departments must be recognized as frontline contributors in acute care hospitals.

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