

# IS for Abdominal Surgical Patients

Katie Reese BSN, RNC-OB  
and SJH Research/Evidence-based Practice Council

## INTRODUCTION

- Postoperative pulmonary complications (PPC) include atelectasis, and nosocomial infections.
- Chest wall pain may lead to hypoventilation
- PPCs may increase morbidity, mortality, and hospitalization cost
- The most common prophylactic method to decrease PPCs is Incentive Spirometry (IS)
  - Mimics deep sigh to increase lung volumes
  - Slow inspiration with hold for a few seconds
  - Visual feedback with IS may improve performance of pulmonary toilet

## PICO Question

Is I.S. beneficial in preventing PPC's in post-abdominal surgical patients compared to turn-cough-deep breathing or no therapy?

## METHODS

Data Bases	PubMed, Ovid Medline, Ovid Embase, Ovid Ebm, CINAHL, Joanna Briggs, UpToDate, and Clinical Key.		
Search Terms	Incentive Spirometry, abdominal surgery, chest physiotherapy, Cough, turn, deep breathing		
Result	11 of 17 articles that answered the PICO question were reviewed and appraised. The articles included 5 RCTs, 1 meta-analysis, 1 Cochrane review, 1 quantitative research, 1 expert recommendation, and 2 literature reviews.		
Level of Evidence	I	8	5- Strong 2-Good 1-Fair
	II	0	0
	III	0	0
	IV	1	Strong
	V	2	2-Good

## SJH INTERNAL DATA

- Incentive Spirometry at SJH
  - Item Number: 78229
  - Item Description: EXERCISER VOLDYNE 4000ML
  - Item Cost: \$1.93ea
  - Daily Usage (Since 1/8/22): 45ea/day
  - 45 x 365= 16,425/year
  - 16,425 x \$1.93= **\$31,700.25**

Outcomes	Article numbers										
	1	2	3	4	5	6	7	8	9	10	11
Forced vital capacity	↑ For IS and DB group	↔					↔				↔
Lung expansion	↔	↔	↔	↔			↔	↑ For both IS and E2-PAP			
LOG	↔	↔	↔					↔		↔	↔
Mortality	↔	↔	↔							↔	
PPC	↔	↔	↔	↔		↔	↔	↔	↔	↔	
SaO2		↔				↔	↔				
compliance			↔		↔						

↔ No difference when compared to control group    ↑ improvement when compared to control group

Thank you to Clarissa Vannier, Medical Librarian, and Sandra Vanice, EBP Specialist, for their help with this literature review.



## LITERATURE SYNTHESIS

- Research findings failed to show a statistically significant difference between deep breathing and IS (1, 2, 8,11).
- While there were no pulmonary complications in the DB group (4) IS alone did not decrease the complication rate or mortality within 30 days (4, 10).
- There was no difference in hypoxemia or mean SaO2 level between control (no therapy) and therapy groups (6).
- Incentive spirometry is not recommended for routine use in the preoperative or postoperative settings to prevent postoperative pulmonary complications for upper-abdominal or coronary artery bypass graft surgeries (7). The evidence indicates there is no benefit of IS when compared to deep breathing (9). There are inconsistencies in IS compliance among patients reducing any potential benefit.
- It is suggested that deep breathing exercises and early ambulation are sufficient for the prevention of PPC's (7). Until evidence of benefit from well-designed clinical trials becomes available, the routine use of IS in postoperative care is not supported (3).

## RECOMMENDATIONS

Based on the literature synthesis the use of I.S. is not recommended post abdominal surgery patients

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