

# Preventing respiratory complications

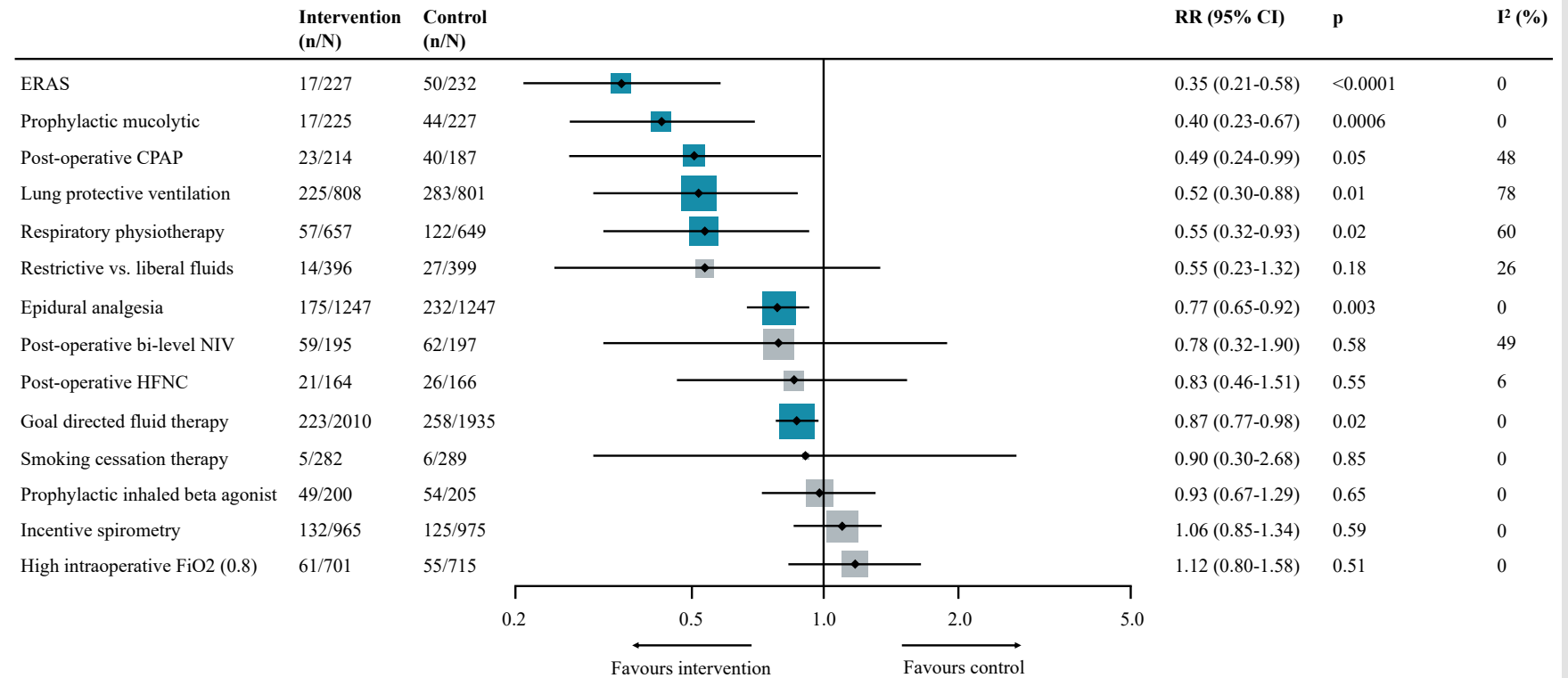
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# Challenges limiting evidence interpretation

- Huge, discordant evidence base to digest
- Variable definitions
  - Only recent consensus on what constitutes a PPC
  - EPCO 2015
  - StEP<sup>1</sup> 2018
- Lack of comprehensive evidence synthesis
  - **2006** American College of Physicians SR and guidelines<sup>2</sup>
- No standardised approach to management

1. Abbott et al. Br J Anaesth. 2018;120(5):1066-1079
2. Lawrence et al. Ann Intern Med 2006; 144:596–608.

# Synthesis of evidence in progress



- 112 RCTs meta-analysis, TSA

# Pre-op

## Recognise the high risk patient

### Non-controversial



#### Procedure-related

- Proximity of incision to thorax

PFTs/CXR/ABGs are poor predictors of PPCs, when used in addition to clinical assessment



**ARISCAT** = validated risk assessment tool

Mazo et al. Anesthesiology. 2014;121(2):219-31

#### Patient-related

- Age
- ASA  $\geq 2$
- CCF/COPD
- Smoker
- OSA
- Well controlled asthma  $\neq$  risk factor

### Controversial/ low grade evidence

#### Modification of risk?

- Delay until at patient best for elective surgery
- Treat as though a non-surgical patient

Timing of when to cease? >8 weeks?

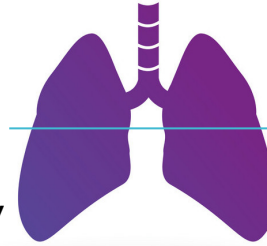
But no published evidence that PPC risk stratification prevents PPCs...

# Intra-op

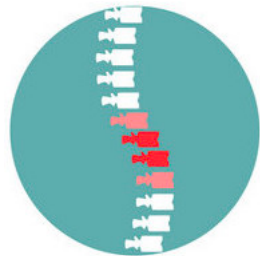
Protect against deleterious effects of surgery and general anaesthesia

## Non-controversial

Modifications to intraoperative ventilation parameters are a **low cost strategy** to protect against PPCs in major/prolonged surgery patients



NNT = 14 (95% CI: 8.3-33.8)



Epidural analgesia has low quality evidence of efficacy in preventing PPCs



Goal directed fluid therapy has moderate quality evidence of efficacy, but small effect size

## Controversial/ low grade evidence

- What constitutes the optimal mode of “protective ventilation”?
- Are benefits applicable to low risk patients?
- How should ventilation be modified in specific patient groups e.g. pre-existing lung disease, morbid obesity, or OLV?

# Post-op

## Lung expansion modalities

Non-controversial



Supervised prophylactic respiratory physiotherapy has low quality evidence of efficacy

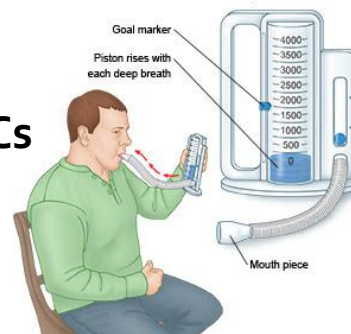
Controversial/  
low grade evidence



post-op CPAP (PRISM trial results pending...)

HFNC and BIPAP have no evidence of efficacy

Moderate quality evidence that **incentive spirometry alone does not reduce PPCs**



## Summary and recommendations

1. PPCs have a major effect on hospital utilisation, healthcare costs and patient mortality
2. Surgical patients may benefit from pre-operative risk stratification for PPCs, using data to individualise perioperative strategies for PPC protection
3. Pre-op, intra-op and post-operative strategies available with variable quality evidence of efficacy
4. Local, multidisciplinary approach to patient pathways and bundles of care may help reduce PPCs