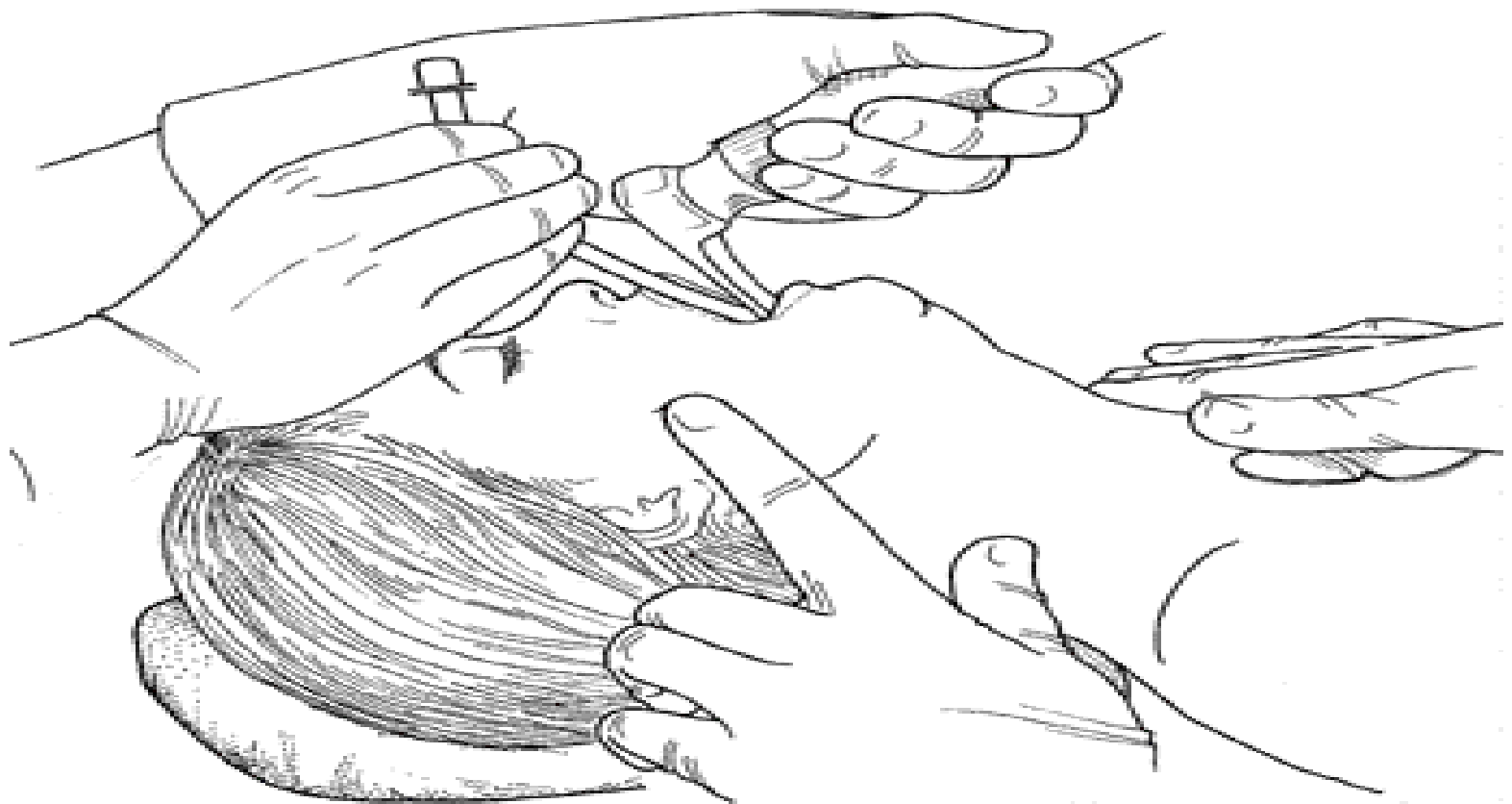


# Meta-analysis on the Use of Systemic Corticosteroids in the Prevention of Postextubation Stridor Among Adult Patients

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# Post Extubation Stridor/ Laryngeal Edema

- Incidence of laryngeal edema varies from 2-6%
- Post extubation stridor... can prolong ICU Stay and increase mortality
- Causes significant morbidity and even death





**Endotracheal Intubation**



**Reactive edema (glottic or Subglottic mucosa)**



**Post extubation Stridor**

**CORTICOSTEROIDS**





# THE SITUATION



*Philippine General Hospital*





# Objectives

- To review the literature whether use of systemic corticosteroids prevent the development of postextubation stridor
- To determine whether the prophylactic use of systemic corticosteroids prevent reintubation from postextubation laryngeal edema
- To site the deleterious effects of prophylactic steroid therapy against postextubation stridor





# METHODOLOGY

- P: Meta-analysis and RCTs on adult patients on mechanical ventilation via endotracheal intubation
- I: parenteral corticosteroids
- O: post extubation stridor, laryngeal edema, reintubation





# Search Strategy

- Medline through Pubmed
- Cochrane Collaboration
- Ovid
- Bibliographic Review







- Intubation OR Intubation, Intratracheal OR Laryngeal Edema OR Stridor OR Extubation) AND (Steroids OR Hydrocortisone OR Beclomethasone OR Dexamethasone OR methylprednisone OR Methylprednisolone OR Glucocorticoids) AND (Randomized Controlled Trials OR Meta-Analysis).
- Limits: adult patients.





# Method of Review

- Two independent reviewers (AAJ, JSS)
- Quality Assessment Scale
- Differences in opinion settled with a third party
- Review Manager 4.2 Software





Literature search



590 citations



Abstract Review

21 articles



2 Reviews, 4 RCTs



Methodologic Review

3 RCTs





# Included Studies

- Intravenous injection of methylprednisolone reduces the incidence of postextubation stridor in intensive care unit patients by Cheng et al (2006)
  - RCT on 128 intubated medical and surgical ICU patients
  - High risk for post-extubation stridor (CLV < 24% tidal volume)
  - Single vs. multiple IV Methylprednisolone or placebo
  - Stridor, laryngeal edema or need for reintubation within 48 hours





# Included Studies

- Postextubation laryngeal edema in adults: Risk factor evaluation and prevention by hydrocortisone by Ho et al (1996)
  - RCT, double blind
  - 77 medical and surgical ICU patients
  - 100 mg IV hydrocortisone vs. placebo
  - Laryngeal edema or stridor within 24 hours post extubation





# Included Studies

- Evaluation of Risk Factors for Laryngeal Edema after Tracheal Extubation in Adults and Its Prevention by Dexamethasone by Darmon et al (1992)
  - RCT
  - 700 intubated patients on MV
  - 8 mg Dexamethasone or matching placebo
  - Laryngeal dyspnea, stridor need for reintubation within 24 hours





- There were no disagreements between reviewers
- All randomized placebo controlled studies.
- Allocation concealment in studies of Darmon et. al. and Cheng et. al.





- All were patient and clinician-blinded.
- The outcome assessors for Cheng et. al. were also blinded.
- All the randomized patients were included in the post randomization analysis.
- All the studies had a grade recommendation of B (meaning satisfactory for inclusion).







Study or sub-category	Treatment n/N	Control n/N	RR (fixed) 95% CI	RR (fixed) 95% CI
Cheng et. al.	8/85	13/43		0.31 [0.14, 0.69]
Darmon et al	27/343	32/351		0.86 [0.53, 1.41]
Ho et. al.	7/39	10/38		0.68 [0.29, 1.61]
Total (95% CI)	467	432		0.67 [0.46, 0.97]

Total events: 42 (Treatment), 55 (Control)

Test for heterogeneity:  $\text{Chi}^2 = 4.55$ ,  $\text{df} = 2$  ( $P = 0.10$ ),  $I^2 = 56.1\%$

Test for overall effect:  $Z = 2.12$  ( $P = 0.03$ )

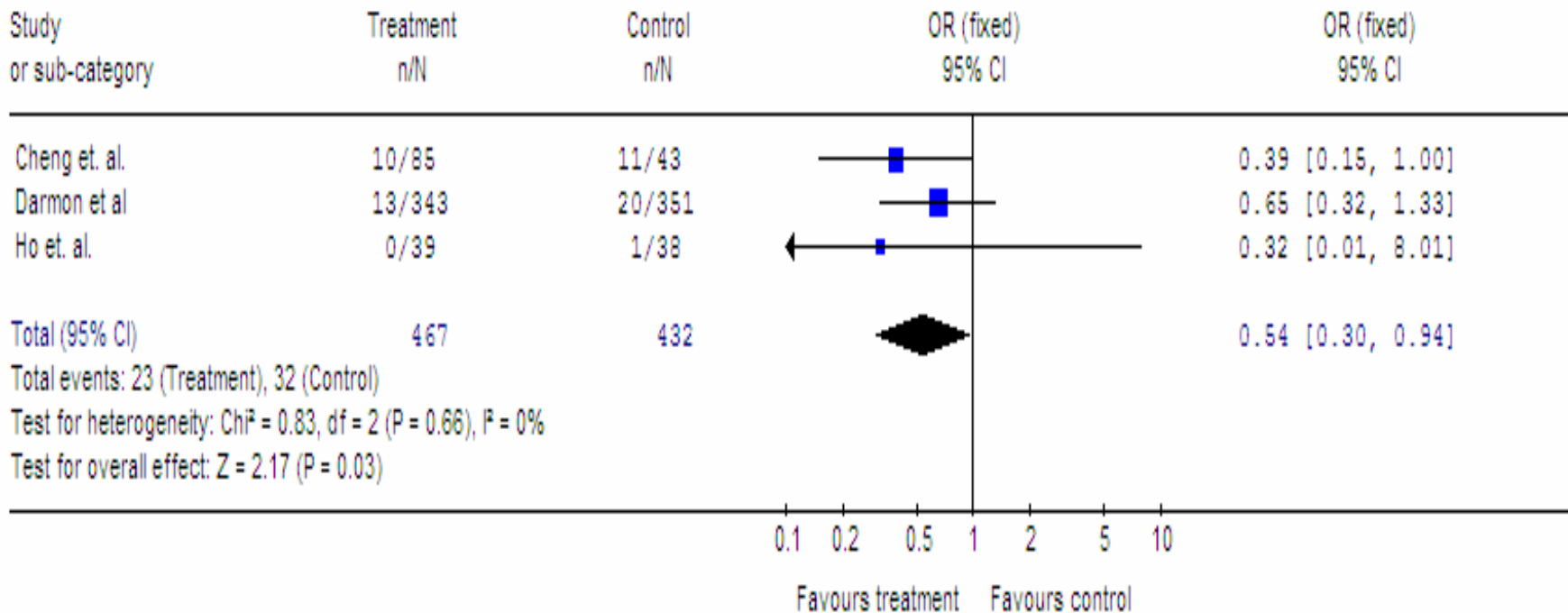
0.1 0.2 0.5 1 2 5 10

Favours treatment Favours control





Review: New review  
 Comparison: 01 Use of Corticosteroids (no grouping based on dosing schedule)  
 Outcome: 02 Reintubation





Study or sub-category	Treatment n/N	Control n/N	OR (fixed) 95% CI	OR (fixed) 95% CI
Cheng et. al.	5/43	13/43		0.30 [0.10, 0.95]
Darmon et al	27/343	32/351		0.85 [0.50, 1.45]
Ho et. al.	7/39	10/38		0.61 [0.21, 1.82]
Total (95% CI)	425	432		0.68 [0.44, 1.06]

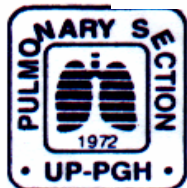
Total events: 39 (Treatment), 55 (Control)

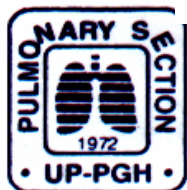
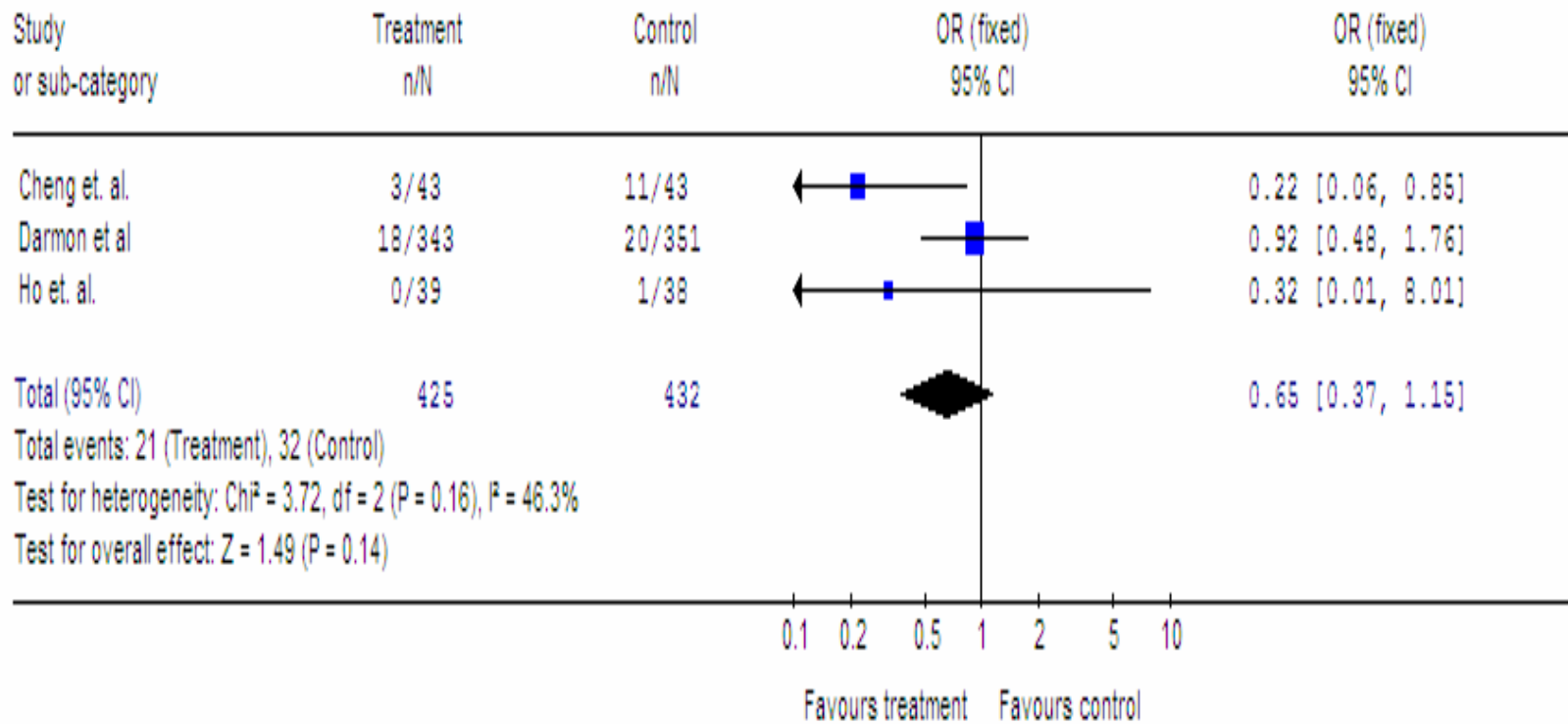
Test for heterogeneity:  $\text{Chi}^2 = 2.64$ ,  $\text{df} = 2$  ( $P = 0.27$ ),  $I^2 = 24.4\%$

Test for overall effect:  $Z = 1.71$  ( $P = 0.09$ )

0.1 0.2 0.5 1 2 5 10

Favours treatment Favours control







# Discussion

- the population involved in the third trial (Cheng et al) involved patients at high risk for developing the postextubation complication
- previous studies involved unstratified patients
- Use of steroids as prophylaxis be used after a thorough assessment of the risk of the patient for developing postextubation complications.





# Discussion

- The difference between multiple dosing or single dosing of IV steroids need to be elucidated further.
- The timing of the administration of the drug needs also to be studied.
- The side effects of systemic steroids reported are too minimal if used for prophylaxis





# Conclusion

- Use of systemic corticosteroids prior to extubation prevents the development of post extubation laryngeal edema, stridor and need for reintubation especially among high risk populations with minimal side effects



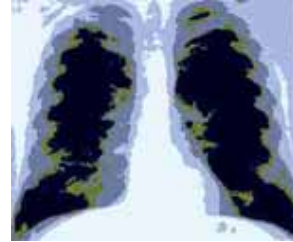
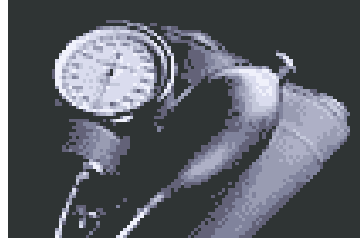


# Recommendation

- We likewise recommend that future researches on objective parameters to determine high risk population other than the cuff leak test be made.







THANK YOU !

