DEM Journal Club

# Article Appraisal

**Article:** Emergency Department Corticosteroid Use for Allergy or Anaphylaxis is not Associated with Decreased Relapses

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## Background and Study Objective(s):

In the Emergency Department, corticosteroids are frequently used to treat symptoms from allergic reactions as well as to prevent subsequent reactions. This is practiced without any solid supporting evidence. This study set out to identify if there was a relationship between improved clinical outcomes/likelihood of relapse after emergency department discharge and steroid administration.

## Study Design:

Retrospective cohort study. Chart review spanning 5 year time period (April 1, 2007 to March 31, 2012) at two urban academic Emergency Departments in Vancouver. Included patients with the primary diagnosis of "allergic reaction". Exclusion criteria: < 17 yrs old, primary diagnosis of asthma with allergic reaction as secondary diagnosis, patient not assessed by MD or RN, patient with pre-existing condition known to cause non-allergic angioedema, allergen determined to be an ACE inhibitor, or patient receiving oral steroid medication before ED presentation.
Patients in hospital > 24 hours were excluded from the primary analysis but included in analysis of secondary outcomes of biphasic reactions and mortality. Primary outcome was the number of subsequent allergy-related ED visits within 7 days. Secondary outcomes within 7 days: all cause mortality, number of clinically important biphasic reactions, number of participants with repeated ED visits for any reason. Subgroup analyses included those with anaphylaxis and those for whom the offending agent was likely or known. Also looked at the timing and course of steroids.

## Results:

There were 2,701 eligible patients. 1,181 patients (44%) received corticosteroids in ED (17% IV, 29% oral, 74 pts received both). 813 (30%) received a prescription for oral steroids. Overall 1,288 received steroids either in ED or on discharge.

Allergy related revisits: Steroid group: 75 patients (5.8%). Non-steroid group: 95 patients (6.7%) – unadjusted OR = 0.86, 95%CI:0.63-1.17. Adjusted OR = 0.91, 95%CI:0.64-1.28.
Causal risk difference 0.57% (95%CI:1.53%-2.63%). NNT 39, NNH 65.

There were no deaths.

Biphasic Reactions: 4 in steroid group, 1 in non-steroid group. So rare that no statistical analysis was done.

Any revisit: 134 revisits (5%) were unrelated to allergy. Overall 298 patients (11%) had any revisit (10% in steroid group, 12% in non-steroid group).

Revisits in anaphylaxis subgroup (n = 473): steroids group 15/348 (4.3%), non-steroid group 7/125 (5.6%).

There was no difference in outcome between patients receiving steroids in ED versus those receiving steroids post discharge.

## Validity of Results:

This study used a propensity score analysis for baseline variables and performed adjusted odds ratios. This study adjusted for markers of disease severity and other possible cofounders and still showed no association between steroid administration and the primary outcome. Strong kappa scores across investigators. Well conducted. Limitations: Non-randomized, based on retrospective chart review. Unable to control for unmeasured confounders.

## Generalizability of Results:

This study was done in two urban centres. Generalizability is excellent across patient characteristics like age, sex, comorbidities, ethnicity, etc; however, results may vary across centre settings (e.g. rural). There is the possibility of discrepancy amongst clinicians as the study participants were identified by clinicians' primary diagnosis of allergic reaction. Potential for centre to centre and practitioner to practitioner discrepancy by definition of allergic reaction, as well as anaphylaxis. Unknown if patients did in fact fill prescriptions for outpatient steroids or if they were compliant. Unknown if patients were potentially re-exposed to allergens in the time prior to their revisit to ED. Potential for missed subsequent visits (e.g. to a hospital outside the region). Potential for relapse visits to be inappropriately categorized as unrelated visits. Possible variability amongst physicians regarding discharge instructions on when to return to ED. Potential for missed visits to centres outside of the region as well as missed deaths.

## The Bottom Line:

This study shows no association between the use of steroids and returns to emergency department within 7 days; however, a large scale randomized trial is needed to provide stronger evidence to support this. Continue to weigh the risks and benefits of treating allergic reactions and anaphylaxis with corticosteroids on a patient to patient basis.