<table>
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<th>Does Acetaminophen Poisoning Increase Risk of Allergy to Cats?</th>
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| Abstract text | **Background:** Epidemiologic studies have reported an association between acetaminophen use and allergy/atopy. Allergy to house cats (*F. catus*) is a common medical condition. It is not known whether exposure to acetaminophen in overdose increases the risk of subsequently developing house cat allergy.  
**Hypothesis:** Are acetaminophen overdose patients at increased risk of developing allergy to house cats?  
**Methods:** This is a retrospective study of consecutive patients presenting to a tertiary care hospital, and age/sex-matched controls. A search of our hospital’s electronic medical record system (1992 – September 1, 2011) was used to identify all patients discharged alive following hospital admission for acetaminophen overdose. Each case was age- and sex-matched 2:1 to control patients admitted for an overdose to a non-acetaminophen pharmaceutical product. An event was defined as any inpatient or outpatient encounter containing an ICD-9 code-family notation for asthma or allergic conditions and the word, “cat,” in the provider notes field. Subjects were censored 24 months after their last encounter in our system. Cox proportional hazards analysis was used to evaluate time-to-event.  
**Results:** A total of 84 patients admitted for acetaminophen overdosage were matched to 142 controls. During a median of 16 months of follow-up, 17 acetaminophen overdose patients and 12 controls developed cat allergy (HR: 2.5; 95% CI: 1.2 – 6.8; P = 0.02, Cox PH)  
**Discussion:** Our analysis is limited by the inability to control for prior or subsequent acetaminophen use.  
**Conclusion:** Patients who overdose on acetaminophen may be at increased risk of subsequent developing house cat allergy. |
### Example 2 (Case Report)

**Title**
Neutoprolol Extraction During High-Flux Hemodialysis

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| **Background**: Neutoprolol is a new beta-receptor antagonist that produces life-threatening toxicity in overdose. It is not previously known whether neutoprolol is removed by hemodialysis.  
**Hypothesis**: High-flux hemodialysis increases clearance of neutoprolol compared with native elimination alone.  
**Methods**: This is a single patient chart review. A 42 year old woman with a history of hypertension ingested 28,000 mg of neutoprolol in a suicide attempt. Hypotension and bradycardia were refractory to therapy with glucagon, norepinephrine, and high dose insulin. High flux hemodialysis was initiated 7.2 hours after ingestion. Timed serum neutoprolol levels were obtained before, during, and after hemodialysis as part of routine clinical care. In addition, inlet and outlet neutoprolol levels were obtained from the dialysis circuit. Dialysis was performed using a Frensius 2008K machine and a Markum 6000 cellulose triacetate membrane. Pharmacokinetic calculations were made using SummitPK.  
**Results**: Three pre-dialysis, four intra-dialysis, and two post-dialysis serum neutoprolol measurements were obtained. All demonstrated first-order elimination kinetics. The serum half-life of neutoprolol was 8.4 hours pre-dialysis, 1.2 hours during dialysis, and 7.2 hours post-dialysis. Dialysis clearance of neutoprolol was 65 mL/min. At a time when the serum neutoprolol level was 78.5 mcg/mL, dialysis extraction of neutoprolol was 15.7 mg/min. Following 6 hours of dialysis, the patient was weaned from vasopressor support. She recovered fully and was transferred to psychiatry on 4 days after ingestion.  
**Discussion**: Although this study shows that dialysis increases neutoprolol elimination, whether this translates to clinical benefit is unproven. Because protein binding of neutoprolol is inversely related to serum levels, these results may not apply to the chronic care setting.  
**Conclusion**: High flux hemodialysis effectively removes neutoprolol under overdose conditions. |