**Use of high potency statins and rates of admission for acute kidney injury: multicenter, retrospective observational analysis of administrative databases**

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**Research**

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**Abstract**

**Objective** To quantify an association between acute kidney injury and use of high potency statins versus low potency statins.

**Design** Retrospective observational analysis of administrative databases, using nine population based cohort studies and meta-analysis. We performed as treated analyses in each database with a nested case-control design. Rate ratios for different durations of current and past statin exposure to high potency or low potency statins were estimated using conditional logistic regression. Ratios were adjusted for confounding by high dimensional propensity scores. Meta-analytic methods estimated overall effects across participating sites.

**Setting** Seven Canadian provinces and two databases in the United Kingdom and the United States.

**Participants** 2 067 639 patients aged 40 years or older and newly treated with statins between 1 January 1997 and 30 April 2008. Each person hospitalized for acute kidney injury was matched with ten controls.

**Intervention** A dispensing event was new if no cholesterol lowering drug or niacin prescription was dispensed in the previous year. High potency statin treatment was defined as ≥10 mg rosuvastatin, ≥20 mg atorvastatin, and ≥40 mg simvastatin; all other statin treatments were defined as low potency. Statin potency groups were further divided into cohorts with or without chronic kidney disease.

**Main outcome measure** Relative hospitalization rates for acute kidney injury.

**Results** Of more than two million statin users (2 008 003 with non-chronic kidney disease; 59 636 with chronic kidney disease), patients with similar propensity scores were comparable on measured characteristics. Within 120 days of current treatment, there were 4691 hospitalizations for acute kidney injury in patients with non-chronic kidney injury, and 1896 hospitalizations in those with chronic kidney injury. In patients with non-chronic kidney disease, current users of high potency statins were 34% more likely to be hospitalized with acute kidney injury within 120 days after starting treatment (fixed effect rate ratio 1.34, 95% confidence interval 1.25 to 1.43). Users of high potency statins with chronic kidney disease did not have as large an increase in admission rate (1.10, 0.99 to 1.23). χ2 tests for heterogeneity confirmed that the observed association was robust across participating sites.

**Conclusions** Use of high potency statins is associated with an increased rate of diagnosis for acute kidney injury in hospital admissions compared with low potency statins. The effect seems to be strongest in the first 120 days after initiation of statin treatment.

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