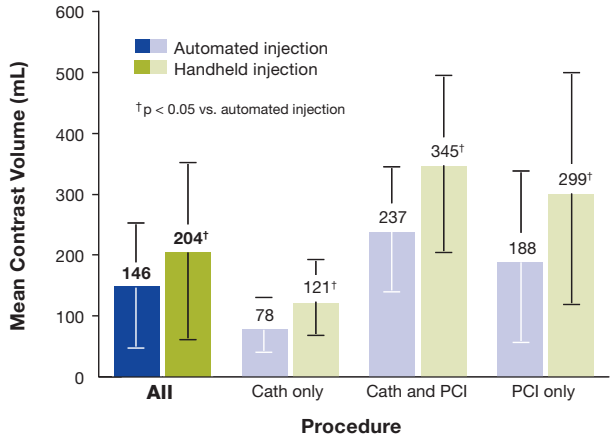
Conclusion: The use of an automated contrast injection system in conjunction with contemporary hydration and pharmacologic strategies to prevent CIN during diagnostic catheterization and PCI was associated with a significant reduction in the use of contrast volume, as well as in the incidence of CIN.[1]

Bar graph depicting mean contrast volume ± standard deviation per case for automated contrast injection and for hand injection.



Automated Contrast Injection in Contemporary Practice during Cardiac Catheterization and PCI: Effects on Contrast-Induced Nephropathy

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ABSTRACT:

Objectives. To evaluate the incidence of contrast-induced nephropathy (CIN) with the use of an automated contrast injection system in conjunction with contemporary measures to prevent CIN after cardiac catheterization and percutaneous coronary intervention (PCI).

Background. The use of automated contrast injection systems can reduce the volume of procedural contrast, but whether lower contrast volume is associated with a lower incidence of CIN is uncertain.

Methods. The incidence of CIN was assessed in 1,798 patients after diagnostic catheterization or PCI at Wake Forest University Baptist Medical Center from April 2002 to November 2004 using traditional handheld manifold injection systems, and in 377 subsequent patients using an automated contrast injection system. Preprocedural hydration was used on a routine basis, and N-acetylcysteine and bicarbonate infusion were used on an ad hoc basis. Outcomes were adjusted by standard logistic regression modeling.

Results. Mean contrast volume (± standard deviation) per case was reduced from 204 ± 147 ml to 146 ± 108 ml, $p < 0.05$, by use of automated contrast injection. The incidence of CIN was 19.3% using manifold injection, and was 13.3%, $p < 0.05$, after use of automated contrast injection. The use of automated contrast injection was associated with a reduced relative risk of CIN, 0.66 (0.47–0.93), compared to manual injection, even after adjustment for baseline clinical and procedural covariates.

Conclusions. The use of an automated contrast injection system in conjunction with contemporary hydration and pharmacologic strategies to prevent CIN during diagnostic catheterization and PCI was associated with a significant reduction in the use of contrast volume, as well as in the incidence of CIN.

1 Call J, Sacrinty M, Applegate R, Little W, Santos R, Baki T, Gandhi S, Kahl F, Kutcher M. Automated contrast injection in contemporary practice during cardiac catheterization and PCI: effects on contrast-induced nephropathy. *The Journal of Invasive Cardiology*, Vol. 18, No. 10, October 2006:469-474.

"In this retrospective observational study, the use of automated contrast injection in conjunction with contemporary strategies of hydration and N-acetylcysteine use for diagnostic catheterization and PCI procedures was associated with a 30% lower use in contrast volume, a 30% lower incidence of CIN and a 50% lower incidence of acute renal failure."[1]

ACIST Contrast Delivery Systems