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## Health Care Costs Associated with AKI

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Brenda Hemmelgarn†, Betty Chui†, Braden Manns†, Scott Klarenbach\*, S  
on behalf of the Alberta Kidney Disease Network


















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## Visual Overview

## Health Care Costs Associated with Acute Kidney Injury

Methods						
 <b>Alberta</b> Nov, 2002 to April, 2009 239,906 hospitalized adults	 6 months baseline Cr determined prior to admission	 AKI: AKIN-determined by peak Cr	 14 days	 90 days Recovery: determined by Cr after D/C		
Results						
	N 	hospital mortality 	one year mortality	length of stay 	hospital cost 	
 No AKI	206,650 (86%)	3%	12%	8.9 days	\$9,444 CA	
  Stage 1	25,495 (11%)	12%	25%	11.4 days	\$12,356 CA	
  Stage 2	4,598 (2%)	27%	41%	12.8 days	\$14,370 CA	
  Stage 3	2,493 (1%)	34%	47%	13.7 days	\$14,822 CA	
 Stage 3 + Dialysis	670 (0.3%)	50%	56%	16.5 days	\$24,260 CA	

**Conclusion** Severity of AKI, need for dialysis, and lack of kidney recovery are associated with significant health care costs in hospitalized patients and persist a year following admission.

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## Abstract

**Background and objectives** An understanding of the health care resource use associated with AKI is needed to frame the investment and cost-effectiveness of strategies to prevent AKI and promote kidney recovery.

**Design, setting, participants, & measurements** We assembled population-based cohort of adults hospitalized in Alberta between November of 2002 and March of 2009 without ESRD or an eGFR <15 ml/min per 1.73 m<sup>2</sup>. Outpatient serum creatinine measurements 6 months preceding admission defined baseline kidney function, and serum creatinine during the first 14 days of hospitalization defined Acute Kidney Injury Network stage; kidney recovery defined as serum creatinine within 25% of baseline and independence from dialysis was assessed at 90 days after AKI. Health care utilization and costs (in 2015 Canadian dollars) were determined from inpatient, outpatient, and physician claims datasets during the index hospitalization, recovery period (90 days post-AKI assessment), and 3–12 months post-AKI. A fully adjusted generalized linear model regression analysis was used to estimate costs associated with AKI.

**Results** Of 239,906 hospitalized subjects, 25,495 (10.6%), 4,598 (1.9%), 2,493 (1.0%), and 670 (0.3%) had Acute Kidney Injury Network stages 1, 2, 3 without dialysis, and 3 with dialysis, respectively. Greater severity of AKI was associated with incremental increases in length of stay (+2.8; 95% confidence interval, 1.4 to 4.3 to +7.4; 95% confidence interval, 7.2 to 7.5 days) and costs (+\$3779; 95% confidence interval, \$3555 to \$4004 to +\$18,291; 95% confidence interval, \$15,573 to \$21,009 Canadian dollars) from admission to recovery assessment (3 months). At months 3–12 postadmission, compared with subjects without AKI, AKI with kidney recovery and AKI without kidney recovery were associated with incremental costs of +\$2912–\$3231 and +\$6035–\$8563 Canadian dollars,

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respectively. The estimated incremental cost of AKI in Canada is estimated to be over \$200 million Canadian dollars per year.

**Conclusions** Severity of AKI, need for dialysis, and lack of kidney recovery are associated with significant health care costs in hospitalized patients and persist a year after admission. Strategies to identify, prevent, and facilitate kidney recovery are needed.

acute renal failure chronic kidney disease dialysis costs  
resource utilization creatinine Cost-Benefit Analysis Inpatients  
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## We recommend

Association between AKI, recovery of renal function, and long-term outcomes after hospital discharge.

Neesh Pannu et al., Clin J Am Soc Nephrol

Acute kidney injury episodes and chronic kidney disease risk in diabetes mellitus.

Charuhas V Thakar et al., Clin J Am Soc Nephrol

Predictors of Recurrent AKI.

Edward D Siew et al., J Am Soc Nephrol

Subacute kidney injury in hospitalized patients.

Tomoko Fujii et al., Clin J Am Soc Nephrol

Candidate Surrogate End Points for ESRD after AKI.

Morgan E Grams et al., J Am Soc Nephrol

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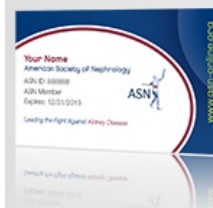


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