

## **ELECTRONIC MEDICAL RECORDS SYSTEM VALIDATION OF CLAIMS-BASED QUERIES FOR ACUTE RENAL FAILURE**

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**Purpose:** To explore the value of different types of data, we compared diagnostic coding of acute renal failure (ARF) in commercial payer claims data versus clinical results in the Regenstrief Medical Records System/Indiana Network for Patient Care (RMRS/INPC).

**Methods:** The HealthCore Integrated Research Database (HIRD) contains eligibility, medical, and pharmacy claims for approximately 1.3 million fully-insured members in WellPoint's Indiana-based health plan. The RMRS/INPC contains clinical data from the five major Indianapolis hospital systems. Patients from the HIRD were selected if they had an acute renal failure ICD9 code (584.\*\* or 593.9\*) with a service date from 6/2005 to 7/2007, preceded by  $\geq 6$  months with 1) no ICD9 codes for acute or chronic renal disease, and 2) continuous eligibility in the plan. To be analyzed in RMRS/INPC, we required two serum creatinine (Cr) values in the period 90 days before to 30 days after the index HIRD ARF ICD9 code. Simplified "RIFLE" criteria were used, with max:min Cr ratio  $\geq 1.5$  considered "risk" of ARF,  $\geq 2.0$  "injury," and  $\geq 3.0$  (or [max Cr  $\geq 4.0$  mg/dl and {(max Cr – min Cr)  $\geq 0.5$  mg/dl}] "failure." Minimum Cr could precede or follow the max.

**Results:** There were 679 patients (54% female, 93% white) who met inclusion criteria in the HIRD and also had, in the RMRS/INPC,  $\geq 2$  Cr values from 90 days before to 30 days after the (index date) payer claim for ARF. Among the 679, 364 (54%) had "risk" for ARF, 210 (31%) had "injury," and 107 (16%) had "failure"; 310 (46%) did not meet any RIFLE criteria for ARF. Thus, the positive predictive value of the payer claims-based ARF query was 54%, 31%, or 16% using RIFLE "risk," "injury," and "failure" as the gold standard, respectively.

**Conclusion:** To the extent that populations overlap, clinical data can be used to explore the accuracy of ARF queries based on payer claims. The definition of ARF in payer claims may require refinement in order to improve the positive predictive value of the claims-based approach.