METHODS

Data Source
• Data for years 2001 through 2011 were obtained from the Healthcare Cost and Utilization Project National Inpatient Sample (NIS).
  – The NIS database is a cross-sectional survey of data based on stratified random sampling of discharges in community hospitals in the US.
  – It is the largest publicly available inpatient care database in the US, containing data on > 7 million inpatient hospital stays of individuals covered by Medicare, Medicaid, or private insurance as well as the uninsured.
  – From 2001 through 2011, the NIS included 100% of hospitalizations from the random 20% sample of acute-care hospitals (approximately 1000 hospitals) in the US.
  – NIS data are commonly used to produce national estimates of health care utilization, access, charges, quality, and outcomes and to assess trends over time.

Cohort Selection
• Hospital discharges with a diagnosis of hypoglycemia were identified using a previously validated algorithm based on International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes.
  – Principal discharge diagnoses for hypoglycemia (ICD-9-CM: 251.0, 251.1, 251.2, 251.3) had to occur in conjunction with a secondary ICD-9-CM diagnosis code for diabetes (250.xx).
  – Principal discharge diagnosis of diabetes with other manifestations (diabetic hypoglycemia—not otherwise specified or hypoglycemic shock—not otherwise specified) (ICD-9-CM code: 250.8), with the exclusion of admissions that occurred in conjunction with any of the following secondary ICD-9 codes: 259.8, 272.7, 681.xx, 682.xx, 686.9x, 707.xx, 709.3, 709.7-730.2, or 731.8.
• Patients were required to be aged ≥ 18 years at the time of hospitalization.

Study Measures
• Total costs were estimated by applying Medicare average cost-to-charge ratios to reported charges.
• Costs were adjusted for inflation to 2014 US dollars using the medical care component of the US Consumer Price Index.
• NIS-assigned discharge weights were used to derive nationally representative estimates.

Analysis
• Descriptive statistics were used to describe patient characteristics associated with eligible discharges during the study period.
  – The AHQR Exhaunder morbidity index (excluding uncomplicated and complicated diabetes) was used to determine morbidity burden.
  – Multivariable generalized linear models were performed to assess average costs per hospitalization by calendar year.
  – All models were risk adjusted for age, sex, and comorbidities.
  – Least-square means statistics were used to produce adjusted, calendar-year–specific cost estimates.
• Total annual costs were calculated by multiplying the per-hospitalization estimated costs in each calendar year by the number of hypoglycemia-related hospital discharges in the given calendar year.
• All analyses were performed using SAS version 9.4.