In a recent year, hospital emergency departments (EDs) in Rhode Island provided care to over 380,000 patients who did not require subsequent admission to an inpatient or observation bed. Many ED visits are for true emergencies that could not be treated in other health care settings, but there has been much discussion among providers, payers, and policy makers on whether some of these patients could have been treated in less intensive and more appropriate settings, had those settings been available, and whether additional ED visits could have been avoided had the patient’s primary care been adequate. A recent study has classified ED visits based on whether they are medical emergencies, whether they require care from an emergency department, and whether they are preventable or avoidable with adequate primary care. The results of this study have been applied to emergency department visit data from hospitals in Rhode Island for presentation here.

**Methods**

Under licensure regulations, the eleven acute-care general hospitals and two psychiatric facilities in Rhode Island report to the Department of Health a defined set of data items on each emergency department visit beginning with visits occurring January 1, 2005. The data reported includes patient-level demographic and clinical information. This analysis covers ED visits occurring January 1 – December 31, 2005 and is limited to ED visits not resulting in admission to the hospital. Due to complexities in the manner in which hospitals report ED data, the data presented here are subject to change as methods to distinguish ED visits that result in inpatient admission at acute-care facilities from those that do not are improved.

Billings, et al., reviewed approximately 5,700 medical records of ED visits in New York and classified them according to three standards – (1) emergent cases vs. non-emergent cases, (2) cases requiring a level of care provided only by a hospital ED vs. cases treatable in a primary care setting, and (3) cases that were preventable or avoidable with adequate primary care vs. those not preventable or avoidable. Cases where the first-listed diagnosis was injury, mental health-related, or alcohol or drug-related were not classified. The algorithm resulting from that study has been applied to the ED visit data submitted from Rhode Island hospitals for calendar year 2005 to produce the estimates presented here. (The Center for Health and Public Service Research at New York University makes available a computer program for use with ED databases, and that program was adapted for use with Rhode Island ED data.)

**Results**

In 2005, there were 382,247 visits to EDs in Rhode Island’s acute-care general and psychiatric hospitals that did not result in an inpatient stay. Of these, an estimated 44% were in one of the three categories indicating the ED visit was either unnecessary or avoidable, including 19.8% non-emergent cases, 18.8% emergent cases not requiring the facilities of a hospital ED, and 5.4% emergent cases requiring the facilities of a hospital ED but preventable or avoidable with adequate primary care. (Figure 1) Cases where the first-listed diagnosis was injury, mental health-related, or alcohol or drug-related were not classified. The algorithm resulting from that study has been applied to the ED visit data submitted from Rhode Island hospitals for calendar year 2005 to produce the estimates presented here. (The Center for Health and Public Service Research at New York University makes available a computer program for use with ED databases, and that program was adapted for use with Rhode Island ED data.)

**Figure 1. Classification of emergency department visits**

- **Injuries, Mental Health, Alcohol or Drug Related**
- **Emergent**
  - ED Care Needed
  - Not Preventable/Avoidable
- **Primary Care Treatable**
- **Non-Emergent**
- **Not Classifiable**

**Figure 2. Emergency department visits by classification category, Rhode Island, 2005**

- Injury 30.0%
- Mental Health Related 3.4%
- Alcohol Related 2.0%
- Drug-Related 0.2%
- Unclassifiable 10.0%
- Not Emergencies 19.8%
- Emergencies, Treatable in Primary Care Setting 18.8%
- Emergencies, ED Required, Avoidable with Primary Care 5.4%
- Emergencies, ED Required, Not Avoidable 10.4%

**N = 382,247**
abuse. Approximately 10% fell into categories that could not be classified according to the Billings scheme.

The proportion of ED visits that fell into one of the three categories representing unnecessary or avoidable utilization of the ED varied with patient characteristics. Higher than average proportions were seen among patients who resided in one of the six core cities in Rhode Island (47.1%), who were enrolled in the state’s Medicaid Program (49.9%), or who were Hispanic (50.4%), Black (47.7%), or Asian (47.2%). (Figure 3) The lowest proportions were seen among those who were uninsured (41.7%), who lived outside the core cities (41.9%), who had private insurance coverage (42.6%), or who were White (42.6%).

**DISCUSSION**

The Billings algorithm classified just over half (54.4%) of ED visits at Rhode Island hospitals that did not result in an inpatient admission by whether they were emergent, treatable in a primary care setting, and preventable or avoidable with adequate primary care. Fewer than one-fifth of the classified visits were classified as emergent, not treatable in a primary care setting, and not preventable or avoidable with adequate primary care. The remaining visits can be looked at as an upper-bound estimate of the volume of ED visits in Rhode Island that may be avoidable or treated in other settings under the right circumstances.

There are clearly some caveats needed in applying the Billings methodology to Rhode Island ED data. The classification scheme is based on medical record reviews of 5,700 ED visits during 1994 and 1999 in Bronx Borough, New York City, where access to medical care and patterns of care may be much different than in Rhode Island in 2005. In addition, the data from the 5,700 examined records were used to apportion visits with 659 different principal diagnosis codes, so that most proportions used in the algorithm are based on small numbers of cases and therefore may be imprecise. However, the algorithm is useful in providing a working estimate to inform changes in policy and operation that may result in better care and better outcomes for these patients. Hospital emergency departments have an important role in ambulatory care, but other care settings are better organized to provide continuity of care, patient education, and management of chronic conditions, all of which are hallmarks of a good primary care system.

**REFERENCES**

