Variation and Trends in ED Use of Radiographs for Asthma, Bronchiolitis, and Croup in Children

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KEY WORDS
emergency department, asthma, bronchiolitis, croup, quality, performance indicators, measures, trends, variation, pediatric, radiograph

ABBREVIATIONS
CI—confidence interval
ED—emergency department
ICD-9-CM—International Classification of Diseases, Ninth Revision, Clinical Modification
NHAMCS—National Hospital Ambulatory Medical Care Survey
OR—odds ratio

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WHAT’S KNOWN ON THIS SUBJECT: Variation in the emergency department (ED) use of radiographs for asthma, bronchiolitis, and croup exists. Unnecessary radiographs contribute to higher costs of care, decreased ED efficiency, and increased radiation in children.

WHAT THIS STUDY ADDS: Despite no changes in guidelines to support routine use, there is a significant upward trend in the use of radiographs for children with emergency department visits for asthma. Pediatric-focused EDs use significantly fewer radiographs for asthma, bronchiolitis, and croup.

abstract

OBJECTIVES: The objectives were (1) to determine trends in radiograph use in emergency department (ED) care of children with asthma, bronchiolitis, and croup; and (2) to examine the association of patient and hospital factors with variation in radiograph use.

METHODS: A retrospective, cross-sectional study of National Hospital Ambulatory Medical Care Survey data between 1995 and 2009 on radiograph use at ED visits in children aged 2 to 18 years with asthma, aged 3 months to 1 year with bronchiolitis, and aged 3 months to 6 years with croup. Odds ratios (ORs) were calculated and adjusted for all factors studied.

RESULTS: The use of radiographs for asthma increased significantly over time (OR: 1.06; 95% confidence interval [CI]: 1.03–1.09; P < .001 for trend) but were unchanged for bronchiolitis and croup. Pediatric-focused EDs had lower use for asthma (OR: 0.44; 95% CI: 0.29–0.68), bronchiolitis (OR: 0.37; 95% CI: 0.23–0.59), and croup (OR: 0.34; 95% CI: 0.17–0.68). Compared with the Northeast region, the Midwest and South had statistically higher use of radiographs for all 3 conditions. The Western region had higher use only for asthma (OR: 1.67; 95% CI: 1.07–2.60), and bronchiolitis (OR: 2.94; 95% CI: 1.48–5.87). No associations were seen for metropolitan statistical area or hospital ownership status.

CONCLUSIONS: The ED use of radiographs for children with asthma increased significantly from 1995 to 2009. Reversing this trend could result in substantial cost savings and reduced radiation. Pediatric-focused EDs used significantly fewer radiographs for asthma, bronchiolitis, and croup. The translation of practices from pediatric-focused EDs to all EDs could improve performance. Pediatrics 2013;132:245–252
Respiratory illnesses are among the top 10 diagnoses for emergency department (ED) visits for children <17 years of age in the United States.¹ Three of the most common pediatric respiratory illnesses, asthma, bronchiolitis, and croup, account for nearly 1 million ED visits each year.² Practice variation in US EDs has been previously reported for bronchiolitis.³ With the use of pediatric specific ED quality measures and National Hospital Ambulatory Medical Care Survey (NHAMCS) data, we have reported on the 2005 US ED performance for the care of children with asthma, bronchiolitis, and croup. In that study we found a high rate of use of radiographs in children who present to EDs with these illnesses.

There is no consensus on a rate of discretionary use of radiographs in EDs for children presenting with respiratory illnesses. Recommendations regarding the use of radiography in the National Heart, Lung, and Blood Institute guidelines⁴-⁶ have been unchanged since 1991, and do not provide succinct recommendations to affect the discretionary use of radiographs; however, performance measures and benchmarks for the use of chest radiographs in ED care of asthma have been reported,⁷-⁹ and studies have shown that many children presenting with respiratory illnesses can be managed safely and effectively in EDs without diagnostic imaging.¹⁰,¹¹ The average cost of a chest radiograph is $370.¹² The ED length of stay is increased by an average of 27 minutes when a radiograph is ordered.¹³ Therefore, reductions in radiograph use can be expected to produce substantial savings in health care costs, reduce radiation, improve ED efficiency, and result in greater cost-effectiveness of care.

Despite expected heterogeneity in decisions about the use of radiographs, robust data are lacking regarding nationwide trends and patterns in the use of radiographs for children with asthma, bronchiolitis, and croup. Such information would inform policy and guide studies comparing outcomes in different settings of ED care.

We examined trends and patterns of radiograph usage in a nationally representative sample of EDs. The objectives of this study were (1) to determine trends in use of radiographic imaging in US ED care of children with asthma, bronchiolitis, and croup; and (2) to examine the association of patient- and hospital-related factors with variations in use of radiographic imaging for children with these conditions.

**METHODS**

**Data Sources**

A retrospective cross-sectional study of ED encounters compiled from NHAMCS for the years 1995–2009 was performed. The NHAMCS is a national probability sample survey of nonfederal, general, and short-stay hospitals conducted by the Centers for Disease Control and Prevention’s National Center for Health Statistics, Division of Health Care Statistics. A multistage probability sample is used to collect information on visits to EDs. The survey probability design, multistage estimation procedure, and implementation are described elsewhere.¹⁴ The survey instrument is a Patient Record Form collecting standard data, which staff are trained to complete by specially qualified interviewers.¹⁴ Quality is ensured through a number of checks. A field representative reviews records on-site and follows up on missing and inconsistent data. Code ranges and inconsistencies are screened during the data entry process. All records undergo independent verification. NHAMCS data represent a proportion of visits, not a proportion of patients, because these surveys do not track individual patients. Characteristics include up to 3 diagnoses using the *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD-9-CM), up to 3 reasons for visit, and up to 8 medications.

Patient factor variables examined were age, gender, race/ethnicity, and insurance status. Additional variables included the following: hospital ownership, hospital location as defined by metropolitan statistical area, and region of the country. In addition, we computed a hospital-related variable “pediatric-focused ED” if >80% of visits to the ED were by children <18 years of age. A number of methods have been used to compute a pediatric-focused ED or a children’s hospital ED variable, including mean patient age¹⁵ and percentage of visits based on a defined pediatric age group.¹⁶ The definition of our variable is consistent with this methodology and consistent with our previous work.²

The protocol for this study was approved by the Children’s Mercy Hospitals and Clinics Pediatric Institutional Review Board.

**Study Population**

Three study populations were defined to match US Emergency Medical Services for Children program performance improvement measures.² We studied children 2 to 18 years of age with a diagnosis of asthma, children aged 3 months to 1 year with a diagnosis of bronchiolitis, and children aged 3 months to 6 years with a diagnosis of croup. For each of these conditions, the diagnosis had to appear in a primary or either of the 2 secondary diagnoses. We used ICD-9-CM codes of 493.xx for asthma; 466, 466.11, and 466.19 for bronchiolitis; and 464.4 for croup.

The NHAMCS does not include data on illness severity for asthma. Therefore, we used 2 proxy variables to define patients with moderate to severe asthma. Triage category was used because previous studies have suggested that ED triage status predicts severity of
illness. This method has been used in other studies using NHAMCS data to define the immediacy with which the patient should be seen. We added bronchodilator therapy as a second predictor variable because short-acting β-agonists are recommended first-line treatment of moderate to severe asthma exacerbations in the ED.

All medications before the year 2005 were identified by using the National Drug Code Directory. We used the prefix 1940 for antiasthmatics/bronchodilators. For the years 2006 through 2009 we used the Multum Classification Directory with the codes 122, 125, and 180 for albuterol.

The data collected on radiographs changed slightly across the years of the study. From 1995 to 2004, we classified a patient as having a radiograph if the variable “chest xray” or the variable “othexray” was coded as “yes.” From 2005 through 2009, the only relevant variable was “xray,” and we classified a patient as having a radiograph if this variable was coded as “yes.”

NHAMCS race/ethnicity variables were combined into single variables with the following values: white not of Hispanic origin, Hispanic, black not of Hispanic origin, and other/unknown. The pay type variable was combined into 4 categories: commercial insurance (private insurance), government (Medicare and Medicaid), self-pay, and other/unknown (worker’s compensation, blank, no charge, other, and unknown).

Statistical Analysis

The NHAMCS database uses a complex survey design that requires special handling. SEs were calculated by using a weighted approach recommended by the National Center for Health Statistics, which accounts for the complex sampling design of the NHAMCS. All estimates with a relative SE (ie, the SE divided by the estimate expressed as a percentage of the estimate) >30% or those not based on ≥30 cases in the sample data were excluded from the multivariate analysis as recommended by the National Center for Health Statistics. The only group affected by these criteria was the race/ethnicity group “other” in the bronchiolitis analysis. Groups were compared and trends over time were examined with a multivariate logistic regression model by using the svy logistic commands in Stata (StatCorp, College Station, TX). The test for time trend used year as a continuous variable in the logistic regression model. We decided a priori to include age, gender, race, ethnicity, region, and urban status as independent variables in the ED in the logistic regression model; no stepwise selection procedures were considered. All analyses were performed with Stata version 11 for Windows (StataCorp).

RESULTS

During the years 1995–2009, there were a total of 6.3 million visits for asthma, 2.8 million visits for bronchiolitis, and 4.2 million visits for croup. The demographic characteristics of the population are shown in Table 1. Croup records were consistent with an observed higher incidence in males and biennial peaks in odd years. There was a statistically significant upward trend over time in ED use of radiographs at visits for moderate to severe asthma (odds ratio [OR]: 1.06; 95% confidence interval [CI]: 1.03–1.09; P < .001 for trend). This trend represents a yearly increase in use. Over the entire 15-year span, this trend represents a 2.4-fold increase in the odds of use (see Fig 1). There were no significant trends in the use of radiographs for bronchiolitis or croup.

In the multivariate logistic regression analysis, visits to pediatric-focused EDs were associated with decreased radiograph use for all 3 conditions as shown in Table 2, which was statistically significant for asthma (OR: 0.44; 95% CI: 0.29–0.68), bronchiolitis (OR: 0.37; 95% CI: 0.23–0.59), and croup (OR: 0.34; 95% CI: 0.17–0.68). Proprietary hospitals were associated with increased use for bronchiolitis alone (OR: 1.91; 95% CI: 1.03–3.54). Regional increases in use were noted for all conditions in the Midwest (OR: 1.57 [95% CI: 1.12–2.22] for asthma; OR: 2.15 [95% CI: 1.17–3.95] for bronchiolitis; and OR: 1.80 [95% CI, 1.01–3.24] for croup) and in the South (OR: 2.27 [95% CI: 1.52–3.38] for asthma; OR: 1.92 [95% CI: 1.06–3.47] for bronchiolitis; and OR: 3.14 [95% CI: 1.81–5.46] for croup). The West was associated with statistically significant increased use for asthma and bronchiolitis but not for croup. There were no statistically significant associations with metropolitan statistical area for any of the 3 conditions.

Self-pay insurance status was associated with a decrease in the use of radiographs for asthma (OR: 0.58; 95% CI: 0.36–0.93) and an increase in use for bronchiolitis (OR: 2.18; 95% CI: 1.02–4.67). Males (OR: 1.60; 95% CI: 1.09–2.33) and Hispanic children (OR: 1.99; 95% CI: 1.19–3.32) had increased use of radiographs for croup.

DISCUSSION

We found that the rate of radiograph use in the ED care of children with moderate to severe asthma increased significantly from 1995 to 2009. Although a yearly OR of 1.07 appears to be small, when compounded over the study period there is a much greater 2.4-fold increase in the odds of utilizing radiographs. Our results are similar to other studies examining use trends of various imaging modalities in EDs. A NHAMCS study of use trends for computed tomography imaging in children seen in EDs found a fivefold increase from 1995 to 2008; 89.4% of the increased use took place at non–pediatric-focused facilities.

What accounts for our observations in the ED use of radiographs for asthma?
A review of changes in the National Asthma Education and Prevention Program guidelines from 1991 onward did not account for the trend.4–6 Centers for Disease Control and Prevention data do not support that the increased use was due to increased severity of childhood asthma during the period studied. Pediatric ED visits for asthma were relatively stable from 1992 to 2005.26 Hospitalization rates for asthma, another proxy for severity, followed a similar trend.26 Death rates declined from the late 1990s to 2005. The overall asthma attack prevalence (the proportion of the population with at least 1 attack in the previous year) remained level from 1997 to 2009.27

### TABLE 1: Demographic Characteristics of Patients Who Visited the ED From 1995 to 2009

<table>
<thead>
<tr>
<th>Variable</th>
<th>Asthma Number of Records</th>
<th>Asthma Number of Visits (%)</th>
<th>Bronchiolitis Number of Records</th>
<th>Bronchiolitis Number of Visits (%)</th>
<th>Croup Number of Records</th>
<th>Croup Number of Visits (%)</th>
</tr>
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<tbody>
<tr>
<td>Total</td>
<td>1829</td>
<td>6345 (100)</td>
<td>751</td>
<td>2802 (100)</td>
<td>1075</td>
<td>4235 (100)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Male</td>
<td>1078</td>
<td>3771 (59)</td>
<td>440</td>
<td>1562 (59)</td>
<td>708</td>
<td>2877 (68)</td>
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<tr>
<td>Female</td>
<td>751</td>
<td>2574 (41)</td>
<td>311</td>
<td>1150 (41)</td>
<td>367</td>
<td>1359 (32)</td>
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<td>Race/ethnicity</td>
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<tr>
<td>White</td>
<td>701</td>
<td>2819 (44)</td>
<td>339</td>
<td>1263 (45)</td>
<td>696</td>
<td>2823 (67)</td>
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<tr>
<td>Hispanic</td>
<td>378</td>
<td>1209 (19)</td>
<td>187</td>
<td>732 (26)</td>
<td>198</td>
<td>714 (17)</td>
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<tr>
<td>Black</td>
<td>682</td>
<td>2134 (34)</td>
<td>196</td>
<td>722 (26)</td>
<td>135</td>
<td>521 (12)</td>
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<tr>
<td>Other</td>
<td>68</td>
<td>183 (3)</td>
<td>29</td>
<td>—–</td>
<td>46</td>
<td>177 (4)</td>
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<td></td>
<td></td>
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<tr>
<td>Yes</td>
<td>319</td>
<td>1012 (16)</td>
<td>158</td>
<td>639 (23)</td>
<td>150</td>
<td>585 (14)</td>
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<tr>
<td>No</td>
<td>1510</td>
<td>5333 (84)</td>
<td>595</td>
<td>2162 (77)</td>
<td>925</td>
<td>3649 (86)</td>
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<td>Commercial</td>
<td>721</td>
<td>2704 (43)</td>
<td>242</td>
<td>867 (31)</td>
<td>501</td>
<td>2046 (48)</td>
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<tr>
<td>Government</td>
<td>828</td>
<td>2619 (41)</td>
<td>400</td>
<td>1495 (53)</td>
<td>398</td>
<td>1382 (33)</td>
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<td>Self-pay</td>
<td>166</td>
<td>624 (10)</td>
<td>52</td>
<td>214 (8)</td>
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<tr>
<td>Other/unknown</td>
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<td>399 (6)</td>
<td>57</td>
<td>225 (8)</td>
<td>94</td>
<td>476 (11)</td>
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<tr>
<td>Yes</td>
<td>1670</td>
<td>5531 (87)</td>
<td>672</td>
<td>2415 (86)</td>
<td>926</td>
<td>3453 (82)</td>
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<tr>
<td>No</td>
<td>159</td>
<td>814 (13)</td>
<td>79</td>
<td>587 (14)</td>
<td>149</td>
<td>782 (18)</td>
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<td>Region</td>
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<td>Northeast</td>
<td>561</td>
<td>1627 (26)</td>
<td>130</td>
<td>348 (12)</td>
<td>251</td>
<td>802 (19)</td>
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<tr>
<td>Midwest</td>
<td>394</td>
<td>1424 (22)</td>
<td>179</td>
<td>664 (24)</td>
<td>258</td>
<td>1103 (26)</td>
</tr>
<tr>
<td>South</td>
<td>592</td>
<td>2553 (37)</td>
<td>297</td>
<td>1304 (47)</td>
<td>326</td>
<td>1400 (33)</td>
</tr>
<tr>
<td>West</td>
<td>262</td>
<td>941 (15)</td>
<td>145</td>
<td>486 (17)</td>
<td>240</td>
<td>930 (22)</td>
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<td>Ownership</td>
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<tr>
<td>Nonprofit</td>
<td>1329</td>
<td>4695 (74)</td>
<td>545</td>
<td>2070 (74)</td>
<td>816</td>
<td>3222 (76)</td>
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<tr>
<td>Government</td>
<td>328</td>
<td>850 (13)</td>
<td>102</td>
<td>299 (11)</td>
<td>147</td>
<td>533 (13)</td>
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<tr>
<td>Proprietary</td>
<td>172</td>
<td>800 (13)</td>
<td>104</td>
<td>432 (15)</td>
<td>112</td>
<td>480 (11)</td>
</tr>
</tbody>
</table>

MSA, metropolitan statistical area.

* Children with a discharge diagnosis of asthma (ICD-9-CM code 493.xx), triage category urgent, ages 2 to 18 years.

* Infants with a discharge diagnosis of bronchiolitis (ICD-9-CM codes 466, 466.11, or 466.19) ages 3 months to 1 year.

* Children aged 3 months to 6 years with a diagnosis of croup (ICD-9-CM code 464.4).

* Numbers are US estimates in thousands derived by the National Center for Health Statistics.

* Number of observations were insufficient for analysis.

A review of changes in the National Asthma Education and Prevention Program guidelines from 1991 onward did not account for the trend.4–6 Centers for Disease Control and Prevention data do not support that the increased use was due to increased severity of childhood asthma during the period studied. Pediatric ED visits for asthma were relatively stable from 1992 to 2005.26 Hospitalization rates for asthma, another proxy for severity, followed a similar trend.26 Death rates declined from the late 1990s to 2005. The overall asthma attack prevalence (the proportion of the population with at least 1 attack in the previous year) remained level from 1997 to 2009.27

![FIGURE 1](image_url)

**FIGURE 1**

Yearly trends in the use of radiographs for asthma visits in US EDs with estimated trend line (dashed line). Vertical bars represent 95% CIs for the yearly rate.
A number of parent/patient- and physician-related factors could play a role in the trend we observed. Among these are patient/parent expectations, as was noted in an office-based study in adult Medicare eligible recipients, in which the patient’s perceived need for radiographic studies was significantly associated with increased use of radiographs for respiratory problems and low back pain. Similarly, when physicians perceived that parents expected antibiotic treatment for their child, they prescribed it 62% of the time that they practice more aggressively because of inadequate time to spend with patients, malpractice concerns, and clinical performance measures. Clinical performance, including patient satisfaction measures, are increasingly being tied to compensation. A 2008 survey showed that 1 in 7 physicians reported patient satisfaction surveys were moderately or very important in determining their compensation.

Although we noted that the National Heart, Lung, and Blood Institute guidelines on the use of chest radiography in children with acute exacerbations of asthma did not change over the study period, we also believe that they do not provide the criteria that are sufficiently explicit to affect the discretionary use of radiographs. Research has shown that using defined criteria can result in safe reductions in radiograph use in EDs. A retrospective study from Australia of ED asthma care for children showed a significant reduction in unnecessary chest radiographs from 45.3% to 28.4% after the implementation of an education program with criteria that defined when a chest radiograph was unnecessary. Similarly, another ED study outlined criteria for obtaining chest radiographs in asthma patients aged 19 years and decreased radiograph use by 55%. There was no increase in ED return visits or the identification of pneumonia or other pathology on chest radiographs performed for hospitalized patients. Although these studies outline local improvements, they provide evidence of successful behavior change in EDs. Replicating these results in US EDs will require the ability of ED providers and their organizations to adapt to the spread of new ideas as is described in the Institute for Health Care Improvement’s “A Framework for Spread: From Local Improvements to System-Wide Change.”

An important finding of our research is that pediatric-focused EDs used significantly fewer radiographs over the 15-year time period for all 3 conditions. Our results are in agreement with a Canadian study that found that children seen in EDs with front-line pediatric staff were less likely to have radiographs for asthma, bronchiolitis, and croup. An explanation for this finding could be the volume of pediatric patients seen by providers. Although 90% of children are seen in non–pediatric-focused EDs in the United States, more than half of EDs see fewer than 6 patients per day. An association between higher volumes and better outcomes has been reported for certain types of pediatric health care. Whereas volume per se does not lead to better outcomes in health care, it is a proxy measure for other factors including the accumulation of experience by individual providers.
organizational and structural attributes of hospitals. These other factors, including care processes, are not delineated in our study but could be effect modifiers in the performance of pediatric-focused EDs.

In response to variation in care between the children's hospital and regional medical centers, and a lack of national guidelines for both the outpatient and inpatient care of febrile infants aged <90 days, the Utah Intermountain Health System implemented an evidence-based care process model. This system process change resulted in an increase in evidence-based care, improved infant outcomes, and lowered costs.41 Such successful models of systemwide translation could be replicated to implement processes used in pediatric-focused EDs to reduce the use of radiographs.

Some of the findings in our study related to race/ethnicity and insurance status are not readily explained. They appear to be isolated and inconsistent across the 3 disease processes. The reasons for the differences could be multifactorial and beyond the scope of the NHAMCS to discriminate. We found regional differences in radiographic use, with increases in the Midwest and Southern regions for all diseases compared with the Northeast. In the West, a higher radiograph use was seen in asthma and bronchiolitis but not for croup.

Regional variation in diagnostic imaging has been previously described, especially in the Medicare population.42,43 There are many factors involved in regional variation, including local practice patterns, morbidity, and risk factors in the population; access to care; and demographic characteristics. NHAMCS data do not provide the specific clinical information to explain radiograph use in each patient episode or information on final patient outcomes. Without this information, it is difficult to entirely understand the relationship between radiograph use and demographic information, such as race, insurance status, setting, and region.

Other limitations of our study include that it is a secondary data analysis and, as such, there are constraints associated with its use. There is no established rate of radiograph use, and NHAMCS data do not provide specific information to explain the indications for the use of radiographs by the provider. Because this is an observational study, no inferences can be made as far as causation, and any attempts to change behavior across the United States are limited by lack of data regarding causes for ordering radiographs. Nevertheless, a safe reduction in the use of radiographs has been shown to be possible for these diseases in ED settings.

Because this study examines a proportion of visits, not a proportion of patients, it cannot be determined if the results are potentially inflated by individual patients with severe disease who had multiple visits. We restricted our study to include the ICD-9-CM codes to obtain our data; however, providers were not instructed to follow any defined diagnostic criteria before making a diagnosis. Therefore, we cannot confirm the accuracy of the diagnosis of any of the conditions. We were restricted to the 3 diagnoses that NHAMCS records.

The definition of x-ray in the NHAMCS data set is a binary (yes or no) variable and does not distinguish between chest and other radiographs. Because these visits were primarily for respiratory complaints, it is most likely that the radiographs obtained were chest radiographs or lateral neck radiographs for croup. We limited our inclusion criteria to select children with a moderate-to-severe exacerbation by the addition of albuterol and the most urgent triage categories. It is possible that some of the patients with asthma, bronchiolitis, and croup had comorbidities where radiographs were indicated. The number of conditions that would have to be examined to do a formal analysis of comorbidities is too large and complex to apply to this study.

Despite the limitations, the NHAMCS is well suited to study practice variations from a public health or policy perspective. The availability of large numbers of patients, detailed clinical information, and sophisticated sampling techniques provide nationally representative data that are unavailable elsewhere.

CONCLUSIONS

We studied trends and patterns in performance in the ED use of radiographs for asthma, bronchiolitis, and croup and found that radiograph use in moderate-to-severe asthma has increased. Reversing this trend could improve ED efficiency, decrease costs, and decrease radiation exposure. Pediatric-focused EDs used significantly fewer radiographs for all 3 conditions. Future research should study the implementation of translating effective ED care–based models systemwide.

REFERENCES


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HEALTH CARE CONCERNS TOP THE LIST OF RETIREE WORRIES: Most individuals in the working world long for a relaxing retirement; however, retirement planning is not without its stressors. As reported by Reuters (May 6, 2013), new research indicates that individuals approaching retirement are most often concerned about developing serious illness. This finding comes from the 2013 Merrill Lynch Retirement Study which surveyed 6,300 adults who were 45 years of age or older. Among respondents, 72% reported that their top concern for long life was the development of serious health issues. Regardless of individual affluence, other major concerns included the cost of health care, being a burden to their families, unexpected medical expenses, and uncertainty about government health care programs. Interestingly, developing health problems (rather than financial security) was listed as the top reason for early retirement. Clearly, retirement planning is not as easy as it sounds. Perhaps with increased attention paid to maintaining healthy living styles, those approaching retirement age can enjoy all the benefits of not having to work.

Noted by Leah H. Carr, BS, MS-IV
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