Respiratory Disease

Key Findings:

- The percent of "high risk" individuals who reported having had influenza and pneumonia vaccinations is 20.8% and 15.4%, respectively. Rates are higher for elderly individuals on these same measures (65% and 54%, respectively).
- Over 80% of Medicare enrollees hospitalized with pneumonia get blood cultures before antibiotic administration, get their initial antibiotic within 8 hours of hospital arrival, and get antibiotics consistent with current clinical guidelines.
- Nearly a third of children and adults are not prescribed primary therapy medications to control their asthma.
- Rates of child admissions for asthma are 29.5 per 10,000, over double that of adults (12.5 per 10,000).

Background and Impact

Respiratory disease encompasses a broad array of illnesses that affect an increasing number of Americans. As recently as 1980, chronic lower respiratory diseases and influenza and pneumonia did not even appear in the top 10 causes of death in the United States. In 1999, they were the fourth and seventh leading causes of death, respectively.[1] Respiratory diseases are also among the leading causes for hospital admissions nationally, and pneumonia treatment costs in the United States top $9.7 billion.[2] For children, pneumonia is one of the leading causes of hospital admission, and among the elderly, pneumonia admissions have increased 18% since 1988.[3]

Asthma is another important disease. More than 25 million Americans have been told by a provider that they have asthma.[4] Recent data show continuing increases in asthma-related hospitalizations, emergency department visits, and deaths, especially among minority populations.[5]

Tuberculosis (TB) continues to be a national priority condition. After several years of TB resurgence, the number of cases is at an all time low.[6] In fact, TB has declined ten-fold since 1953 when CDC began tracking incidence of the disease.

One of the key reasons respiratory diseases are important for national quality measurement is because they can be treated and managed effectively. The conditions presented in this report are either infectious diseases that may be controlled through immunization or drug therapies, or they are chronic diseases that may be managed with proper primary care and medication.

How the NHQR Measures Respiratory Disease Quality of Care

Measures of quality of care for respiratory illnesses presented in this report fall into the following categories (see full list of measures at end of chapter):

- Preventing influenza through targeted immunization.
- Preventing and treating pneumonia.
- Managing asthma.
- Reducing overprescription of antibiotics for the common cold.[i]
- Treating TB.

All of the aspects of care discussed in this section have been identified as HHS priorities for quality improvement.[7]

One measurement area discussed here is inappropriate care. Articles in both the popular and professional press have focused on rising rates of antibiotic ineffectiveness and drug-resistant infections.[8, 9, 10,11] Reducing antibiotic overuse is a national priority through the National Campaign for Appropriate Antibiotic Use[12] at the Centers for Disease Control and Prevention (CDC).

How the Nation Is Doing[ii]

Drug resistance and the emergence of new strains of certain infectious respiratory diseases, as well as increases in the prevalence of certain chronic lung illnesses, continue to be of concern. Improvement in the delivery of care is possible.

Managing Asthma

The number of people with asthma has more than doubled in the past 15 years; and even if rates were to stabilize at their current numbers, asthma would remain a serious public health issue.[13] Direct health care costs for asthma in the United States total more than $8.1 billion annually, and

[i]Antibiotics are bacterial or fungal metabolites that inhibit the growth of other bacteria or fungi. Some are used clinically against infections, but others are anticancer or immunosuppressive drugs. The measure in this report looked at the use of antibiotics for nasal pharyngeal infections, acute upper respiratory infection and chronic rhinitis.

[ii]Adjusting for known contributing factors, such as gender, age, and insurance status (multivariate analysis) would allow for more detailed exploration of the data, but this generally was not feasible for this report. Any adjustments that were done are noted in the detailed tables. The data presented in this report do not imply causation.

indirect costs associated with lost productivity add another $4.6 billion. Moreover, inpatient hospital services for asthma represent a major medical expenditure nationally at over $3.5 billion annually.[14] Although death from asthma is almost always preventable if care is sought in a timely fashion, more than 4,600 people died of the condition nationwide in 1999.[15] In addition, data[iii] show that:

- Children age 17 and under are much more likely to be admitted for asthma to a hospital than are adults (29.5 per 10,000 versus 12.3 per 10,000).

- Black children in America are nearly twice as likely to be admitted to a hospital for asthma as white children.

- According to national estimates from the National Committee for Quality Assurance (NCQA) HEDIS data set, nearly a third of children and adults are not receiving primary therapy medications[iv] to control their asthma.

The increase in asthma prevalence and its costs to the American health care system have caused concern among health care policymakers and providers. In recent years, there has been considerable attention paid to effective medical management and patient education programs based on clinical guidelines. Research has shown that these programs reduce the use of emergency services and improve quality of life for people with asthma.[16, 17, 18, 19]

Despite the increase in asthma prevalence, there are gains in effective management of asthma. Although even the best primary care may not necessarily avoid hospitalizations, hospital admissions for asthma can be used as one measure of timely and effective primary care. Data from both the National Hospital Discharge Survey (NHDS) and the Healthcare Cost and Utilization Project (HCUP) show improvements in the rate of admissions for asthma. Between 1994 and 2000, these admissions have decreased between 10% and 20% for adults according to NHDS and HCUP figures.

Reducing Overprescription of Antibiotics for the Common Cold

In 1996, the National Center for Health Statistics estimated that viral respiratory tract infections accounted for over 20 million lost workdays in adults and 21 million lost school days in children annually.[20] Too often, these viral infections are being inappropriately treated with antibiotics, a practice that has contributed to the development of drug-resistant strains of bacteria. As a result, a nationwide campaign to reduce antimicrobial resistance has been launched,[21] and the Food and Drug Administration has promulgated new rules on labeling of antibiotics.[22] Addressing the

[iii] Data on hospitalizations for asthma in the NHQR come from the National Hospital Discharge Survey, 2000. Additional data analysis carried out for the report from the HCUP also highlights that the poorest as well as the youngest children are most at risk for being hospitalized for asthma.

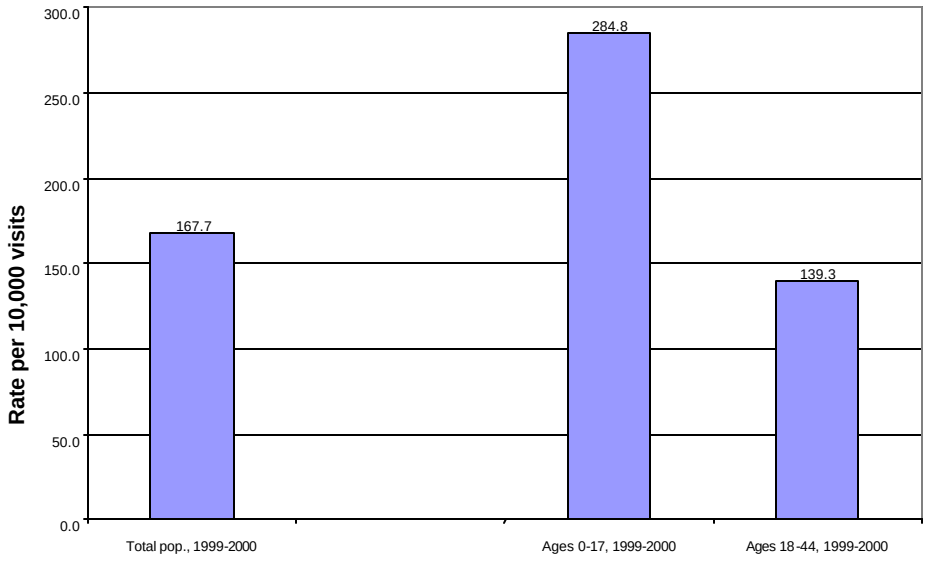
[iv] Primary therapy medications are defined by the NCQA as inhaled corticosteroids.

problem of overprescription of antibiotics is difficult, as patient preferences for these prescriptions exist.[23] Some research has suggested that levels of antibiotic prescriptions are underreported.[24] In addition to the problem of drug-resistance, the inappropriate use of antibiotics has implications for private and public health care spending in physician offices, outpatient clinics, and emergency departments.[25] Despite the attention paid to overprescription of antibiotics, data indicate that there is still room for improvement in this area.

- There has not been any recent statistically significant improvement in the rate of inappropriate antibiotic prescriptions for the common cold (1997 to 1998 vs. 1999 to 2000).[v]

- Visits by children under age 17 are twice as likely as visits by adults to result in inappropriate antibiotic prescriptions (see Figure 13).

Figure 13. Antibiotic prescribing for common cold



Source: NAMCS/NHAMCS, 1999-2000.

Preventing Influenza and Preventing and Treating Pneumonia

State and/or regional data are not available for all respiratory disease measures tracked in this report. However, for a number of respiratory illness measures, such immunizations for influenza,

[v] However, there have been declines in such prescriptions by office-based physicians. See Linder JA and Stafford RS. *JAMA* 9/12/01 p1181 and McCaig L, Besser RE, and Hughes JM *JAMA* 6/19/02, p 3096.

there are data on national performance across the regions of the country. Twenty states had scores of 90% or better for immunizing seniors against the flu (BRFSS, 2001).[vi]

The HHS/CMS Quality Improvement Organization (QIO) program for Medicare enrollees has defined basic quality for the treatment of pneumonia at the hospital level. National performance is excellent on measures such as the percentage of patients who have their blood cultures taken prior to the administration of antibiotics, receive the initial dose of antibiotics within 8 hours of hospital arrival, and receive the correct antibiotics, according to current standard of practice, for their condition. For each of these measures, national performance is over 80%. However, performance on the percentage of patients with pneumonia who receive a flu or pneumonia screening[vii] or immunization prior to hospital discharge is still below 30% for both measures.

What We Don't Know

Respiratory disease is one of the areas within the NHQR framework in which there is consensus on what constitutes good quality of care. We know that immunization reduces the rate of influenza infection and pneumonia. We know how to properly treat patients with pneumonia. We know what medications currently work best for managing asthma, and we know how to control the spread of TB.[26,27,28,29]

There are gaps in our ability and knowledge on how best to diagnose and treat respiratory diseases. For example, management of multi-drug resistant TB is a growing challenge in this country. A significant push will be needed to realize the potential for quality improvement in prevention and treatment of all respiratory diseases. Nationally, more information is needed on:

- Efforts toward quality improvement—whether locally by individual hospitals, or nationally through programs such as the Medicare QIO program—have shown results.[30,31] Ways to expand these gains to other populations and settings need to be explored.

- Without systematic and consistent use of evidence-based guidelines in practice, performance will continue to lag behind knowledge in managing asthma, upper respiratory infection, and in some areas, pneumonia.

- Short-term research that emphasizes drug efficacy trials predominates the literature on asthma. More information is needed that can support clinical decisionmaking on the

[vi] Note that because the Behavioral Risk Factor Surveillance System is a household survey, estimates for the elderly exclude immunization of those in nursing homes

[vii] More information on this screening measure is available in the Measures Specifications Appendix as well as from the Centers for Medicare & Medicaid Services.

intensity of treatment, optimization of medication regimens, and utility of disease management interventions for various asthma populations.[32]

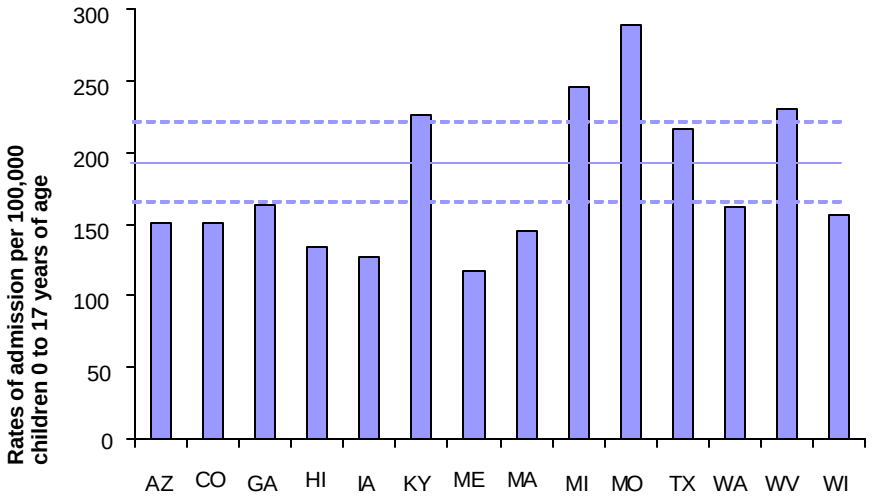
What Can Be Done

Improving quality of care for patients with respiratory disease should be the goal of any quality measurement effort such as this report. We need to understand where we are doing well and where we are doing poorly; for instance, examining existing data to better understand why some areas of the country do better than others at delivering respiratory disease care. HCUP, which tracks national and State data for a variety of quality measures, is one such source of state data. A first look at some State analyses for asthma quality of care is presented in Figure 14.

State Variation in Admission Rates for Childhood Asthma

Admissions for childhood asthma vary widely across the Nation. Several State data sources shared with AHRQ their rates of admission for pediatric asthma—potentially preventable hospitalizations. While this is not a complete or random sample of States, the rates differ by almost two-and-a-half times from the lowest to the highest among these States. The States shown here (see *Note*) are part of AHRQ's Federal-State-Industry partnership, known as the Healthcare Cost and Utilization Project (HCUP), which combines States' hospital discharge records into a uniform database to make such insights possible. The U.S. rate is based on the Nationwide Inpatient Sample, a sample of hospitals from 28 HCUP States weighted to a national estimate.

Figure 14. Childhood asthma admission rates by State, 2000



Horizontal lines represent the U.S. rate and its confidence interval.

Source: Selected HCUP Partner States.

What causes the differences in these preventable hospitalizations? Undoubtedly many factors, including prevalence of the disease; severity of the condition when presented to the doctor; different approaches by physicians to treating asthma in community settings and judgments about when to hospitalize; differential access to hospital beds, emergency rooms, and health care professionals; income levels; availability of insurance and effective disease management programs; environmental risk and behavioral factors (such as second-hand smoke levels) among populations; and education about the warning signs of disease, prevention, and when to consult a doctor. Also, HCUP relies on State-specific data collection methods, which may contribute to the differences. These potential factors need further study.

Note: HCUP Partners providing their data for this example are: Arizona Department of Health Services, Colorado Health & Hospital Association, Georgia Hospital Association, Hawaii Health Information Corporation, Iowa Hospital Association, Kentucky Department for Public Health, Maine Health Data Organization, Massachusetts Division of Health Care Finance and Policy, Michigan Health and Hospital Association, Missouri Hospital Association, Texas Health Care Information Council, Wisconsin Department of Health and Family Services, Washington State Department of Health, West Virginia Health Care Authority.

Better use of data to understand variation and causes behind unfavorable respiratory illness outcomes is one component of what can be done to improve quality of care for these illnesses. Another component is the dissemination of best practices in respiratory illness. In addressing TB,

screening and treatment for latent TB infection (LTBI) have been key components of the national strategy for TB elimination in the United States for over 35 years. Updated guidelines, issued in 2000, urge public health programs to direct TB screening activities toward populations most at risk for LTBI and TB.

The Virginia Department of Health has advocated screening and treatment of LTBI as a TB control strategy for many years. In 1998, approximately 90,000 people were screened for TB infection by local health departments in Virginia; only an estimated 40% belonged to high-risk groups. The remaining low-risk individuals were screened primarily due to requirements established by State or local regulation or private employers. From 1999 to 2002, the Virginia Division of TB Control led a successful, Statewide initiative to establish risk-based, targeted tuberculin testing as the official TB screening policy for all State agencies throughout the Commonwealth of Virginia. As a result of these efforts, testing of individuals at low risk for TB infection or disease was dramatically reduced, as evidenced by the results below:

- Between FY2000 and FY2002, there was a 39.8% (69,569 versus. 41,913 tests) decrease in the number of tuberculin skin tests administered State-wide. Thirty of the thirty-five local districts reported decreases in the number of tests administered.

- As a consequence of this policy change, use of State-funded chest radiography services declined by 88%, resulting in an annual cost savings of nearly $175,000 compared with FY 1998.

- Over this same time period, the percentage of positive results among those tested increased from 3.4% to 6.1%, suggesting that the targeted testing policy has improved the efficiency of screening.[33]

List of measures

Respiratory Diseases

Measure Title	National	State
Immunization, influenza:		
Process: % of high risk individuals (e.g. COPD) age 18-64 who received an influenza vaccination in the past 12 months	Table 1.69a (00)	Table 1.69b (01)
Process: % of individuals age 65 and over who received an influenza vaccination in the past 12 months	Table 1.70a (00)	Table 1.70b (01)
Process: % of institutionalized adults (people in long-term care or nursing homes) who received an influenza vaccination in past 12 months	Table 1.71a (99) Table 1.71b (97)	N/A
Outcome: Hospital admissions for immunization-preventable influenza per 100,000 population	Table 1.72 (00)	N/A
Immunization, pneumonia:		
Process: % of high risk individuals (e.g. COPD) age 18-64 who ever received a pneumococcal vaccination	Table 1.73a (00)	Table 1.73b (01)
Process: % of individuals age 65 and over who ever received a pneumococcal vaccination	Table 1.74a (00)	Table 1.74b (01)
Process: % of institutionalized adults (people in long-term care or nursing homes) who ever received a pneumococcal vaccination	Table 1.75a (99) Table 1.75b (97)	N/A
Treatment of pneumonia:		
Process: % of patients with pneumonia who have blood cultures collected before antibiotics are administered	Table 1.76a	Table 1.76b
Process: % of patients with pneumonia who receive the initial antibiotic dose within 8 hours of hospital arrival	Table 1.77a	Table 1.77b
Process: % of patients with pneumonia who receive the initial antibiotic consistent with current recommendations	Table 1.78a	Table 1.78b
Process: % of patients with pneumonia who receive influenza screening or vaccination	Table 1.79a	Table 1.79b

Process: % of patients with pneumonia who receive pneumococcal screening or vaccination	Table 1.80a	Table 1.80b
Treatment of URI:		
Process: % of visits where an antibiotic is prescribed for the diagnosis of a common cold, children and adults	Table 1.81a (9900) Table 1.81b (9899) Table 1.81c (9798)	N/A
Management of asthma:		
Process: % of people with persistent asthma who are prescribed medications acceptable as primary therapy for long-term control of asthma (inhaled corticosteroids)	Table 1.82 (00)	N/A
Outcome: Hospital admissions for pediatric asthma per 10,000 population under age 18[viii]	Table 1.83a (nhds00) Table 1.83b (nhds99) Table 1.83c (nhds 98)	N/A
Outcome: Hospital admissions for asthma per 10,000 population age 18-64[viii]	Table 1.84a (nhds00) Table 1.84b (nhds99) Table 1.84c (nhds 98)	N/A
Outcome: Hospital admissions for asthma per 100,000 population age 65+	Table 1.85 (00)	N/A
Treatment of TB:		
Process: Percent of TB patients that complete a curative course of TB treatment within 12 months of initiation of treatment	Table 1.86a (99) Table 1.86b (98)	N/A

[viii] This measure is one where two comparable national data sources exist, the National Hospital Discharge Survey and the Healthcare Cost and Utilization Project. Both data sources present information on potentially preventable hospital admissions with some slight variation in the measure specifications for individual measures. This report relied on Healthy People 2010 measure specifications to determine which data source should be used in the report for individual measures. More information is available in the Measures Specifications Appendix. More information on the NHDS is available at http://www.cdc.gov/nchs/about/major/hdasd/nhds.htm. More information on HCUP and the AHRQ Quality Indicators is available at www.ahrq.gov/data/hcup.

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