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## **Where Children Live Affects Their Health Care, Exposing Some to Unnecessary Treatment, Imaging, and Medication**

*First-ever Dartmouth Atlas report on pediatric health care finds wide variation in hospital and outpatient care for children across Northern New England*

**Lebanon, N.H. (December 11, 2013)** – Whether children are receiving recommended care or are subjected to potentially unneeded treatments varies widely depending on where they live, according to the [Dartmouth Atlas Project's](#) first [report](#) on health care provided to children and infants, which examines care in Maine, New Hampshire, and Vermont.

The new report shows that children in Dover, N.H., had almost twice as many emergency room visits as those living in Burlington, Vt., and children in Lebanon, N.H., were more than twice as likely to have their tonsils removed as children in Bangor, Maine. The study also finds that children in Lewiston, Maine, and Manchester, N.H., are 50 percent more likely to receive head CT scans, exposing them to radiation, than children in the areas served by the region's three major children's hospitals: Portland, Maine; Lebanon, N.H.; and Burlington, Vt.

Overall, the study finds that in regions with fewer ambulatory office visits, children were more likely to end up in the emergency room and less likely to receive recommended care. Dartmouth researchers also find that many children in Northern New England are receiving potentially unneeded care that exposes them to harmful side effects and burdens their families with unnecessary medical bills.

"While there are many examples of excellent care for children, the inconsistency in care across a relatively small geographic region raises troubling questions about whether medical practice patterns reflect the care that infants and children need and that their families want or whether they are primarily the result of differences in physician and hospital practice styles," said David C. Goodman, MD, MS, lead author and professor of pediatrics at the Geisel School of Medicine at Dartmouth.

In the study, Dartmouth researchers find dramatic variation in outpatient physician services, hospitalizations, common surgeries, imaging, and prescriptions. The study also looks at the influence insurance coverage, income level, and proximity to a major hospital or children's hospital has on children's health care. To examine the quality of care provided by local hospitals and physicians, the report analyzes health care in three categories:

- Health care proven to be effective for children, including regular primary care office visits, appropriate testing, and medication use;
- Preference-sensitive care, which presents less clear benefits as well as potential risks, but which may be beneficial for some children, such as surgical procedures of the ear, nose, and throat; and

- Supply-sensitive care, which is often tied to the availability of health care resources, such as hospital beds and imaging technology.

“Many of the most important health challenges faced by children do not have straightforward preventive strategies or treatments,” said Goodman. “It is essential that doctors clearly communicate benefits and risks of potential treatment options to patients’ families so they can make informed decisions based on their values and preferences.”

Little is known about variations in the health care children receive, as research on children’s health care has lagged behind that of adults. Measuring pediatric health care and outcomes presents unique challenges, such as the difficulty of obtaining data. The data in this study come from all-payer claims databases in Maine, New Hampshire, and Vermont, which are among the handful of states that require routine reporting of medical claims from commercial insurance plans, along with Medicaid.

“This report gives us an unprecedented glimpse into children’s health care,” said Neil Smiley, president of the Charles H. Hood Foundation, which provided funding for the report. “Other states should follow suit so we can look at the care provided to all children, regardless of their health plan or residence. With this information, physicians, hospitals, and policymakers can identify ways to provide better care, and encourage families to understand and choose what is best for their children.”

#### *Ambulatory office visits*

From 2007-2010, a child living in Northern New England had an average 2.8 outpatient office visits per year, including visits to primary care offices, subspecialty offices, and clinics. Children in St. Albans, Vt., and Bennington, Vt., had more than three times as many ambulatory office visits (both with 3.6 visits) as children in Houlton, Maine (1.2) and Dover-Foxcroft, Maine (1.3). Variation even occurred in areas with large medical centers and children’s hospitals; for example, children in Burlington, Vt., had 3.2 office visits per year, compared to children in Bangor, Maine, who only had 2 visits per year. Overall, areas with higher rates of poverty generally had lower office visit rates.

#### *Medication use for children*

The report examines the proper use of medication therapies, including medications for asthma, upper respiratory infections, and attention deficit hyperactivity disorder (ADHD).

Researchers found that of children in Northern New England who were prescribed medication for ADHD, the most commonly prescribed psychiatric medication for children, 43.5 percent had a recommended follow-up appointment within 30 days in 2009-2010. Nearly 70 percent of children in Newport, Vt., had an initial follow-up visit after receiving ADHD medication, compared to only 35 percent of children in Lewiston, Maine.

#### *Surgical procedures for children*

The most common surgical procedures among children are those related to the ear, nose, and throat, including tonsillectomies, adenoidectomies, and tympanostomy tube placement. There is no consensus on which patients benefit from these procedures, and there were wide variations in the rates of these procedures in children across Northern New England. For instance, children in Middlebury, Vt., were four times more likely to receive tympanostomy tube insertion procedures for ear infections (15.2 procedures per 1,000 children) than children in Bangor,

Maine (3.4), or Presque Isle, Maine (3.7). There was also dramatic variation in the number of children receiving tonsillectomies, as children in Littleton, N.H., were more than four times as likely to undergo tonsillectomies (10.9 procedures per 1,000 children) as children in Bangor, Maine (2.7).

### *Use of imaging for children*

A chest and abdominal CT scan can be valuable for diagnosing serious diseases, but involves high doses of radiation, equivalent to more than 200 chest X-rays. From 2007-2010, there was an average of 8.8 chest or abdominal CT scans per 1,000 children in Northern New England. Patients in Bennington, Vt., were more than three times more likely to receive abdominal or chest CT scans (15.4) than patients in Brattleboro, Vt. (5.1). Among regions with major medical centers, children in Bangor, Maine (11.7) were more than twice as likely to receive CT scans as children in Lebanon, N.H. (4.7).

Comparatively, a chest or abdominal X-ray has low radiation exposure and is much less expensive than a CT scan, but provides a less detailed image. However, there is still marked variation in X-ray use across Northern New England. From 2007-2010, there were 71.5 chest X-rays per 1,000 children. Children in Derry, N.H. (105.1), Rochester, N.H. (103.3), and Concord, N.H. (90.9), were more than twice as likely to receive chest X-rays as children in Littleton, N.H. (40.9), Brunswick, Maine (48.5), and Peterborough, N.H. (48.8). Areas with large hospitals also saw drastic variation, with nearly twice as many children receiving chest X-rays in Manchester, N.H. (93.2), compared to Portland, Maine (54.8).

The Dartmouth Atlas Project is located at the Dartmouth Institute for Health Policy & Clinical Practice and principally funded by the Robert Wood Johnson Foundation, with support from a consortium of funders. This report was supported by a grant from the Charles H. Hood Foundation. The full report, [The Dartmouth Atlas of Children's Health Care in Northern New England](#), and [complete data tables](#) can be found at [www.dartmouthatlas.org](http://www.dartmouthatlas.org).

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### **Methodology**

Overall health care utilization was measured for patients less than 18 years of age in Maine, New Hampshire, and Vermont from 2007 to 2010. The Medicaid population studied included all children insured by Medicaid in the three states, with the exception of Maine in 2010. The commercially insured population studied encompassed more than 90 percent of the pediatric population in Maine and Vermont, and between 66 percent and 77 percent in New Hampshire. Medical event rates represent the number of events that occurred in a defined time period for the studied population, and were adjusted for age, sex, and insurance type. The region studied included 69 hospital service areas (HSAs), which represent local health care markets for community-based inpatient care. For surgical measures, researchers identified 30 pediatric surgical areas (PSAs) in the region by aggregating HSAs based on children's travel for common surgical procedures. Physician information came from the 2009 American Medical Association Physician Masterfile. The HSAs containing the ten largest hospitals across the three states examined were classified as regions with major hospitals.

### **About the Dartmouth Atlas Project**

For more than 20 years, the Dartmouth Atlas Project has documented glaring variations in how medical resources are distributed and used in the United States. The project uses Medicare data to provide information and analysis about national, regional, and local markets, as well as hospitals and their affiliated physicians. This research has helped policymakers, the media, health care analysts and others improve their understanding of our health care system and forms the foundation for many of the ongoing efforts to improve health and health systems across America.