To Our Readers:

It is my pleasure to introduce the fifth annual *Vermont Health Care Quality Report* produced by the Vermont Program for Quality in Health Care, Inc. (VPQHC). The 2000 edition is the result of the time and generosity of an incredible number of organizations and individuals in Vermont and New Hampshire who are involved in health care services.

The Board of Directors of VPQHC is a broad-based coalition dedicated to the continuous improvement of health care services. VPQHC publishes this report each year to advise the public on the quality of care Vermonters receive and let people know about ongoing efforts to improve that care.

Five years ago, the first edition of the *Vermont Health Care Quality Report* consisted of measures focused principally on a few high volume hospital-based procedures. In subsequent editions we have expanded our scope looking at the broader range of services delivered in other health care settings such as practitioners’ offices, nursing homes, emergency rooms and home-based care. In the current report we broaden the scope, again, to include a new section on the quality of care at the end of life.

Measuring the quality of health care services is a daunting task. VPQHC strives to use the most advanced and widely accepted measures available. Each year’s *Quality Report* is based on the most recent information available on the entire Vermont population. The *Quality Report 2000* focuses on the quality of care that occurred in the five years between 1994 to 1998. The major findings of the *Quality Report 2000* address both the current quality of health care services and our ability to measure the quality of care.

• Maternal, infant and child preventive care services in Vermont continue to show high quality, especially in relation to national goals. We believe more comprehensive measures of maternal-infant and pediatric care can be developed to further evaluate and improve care.

• The measures currently available for evaluating the health care of all Vermonters in heart disease, stroke, cancer, diabetes, and behavioral health rely on the volume of services and variation from one region to another. However, the *Spotlights on Improvement* demonstrate both the high quality of care delivered to Vermonters and the broad range of measures currently employed locally to evaluate the quality of care.

• Both in Vermont and nationally, the population is aging and older people generally use more health care services. We need to know more about all of the dimensions of health care quality for elderly Vermonters, including the relationship between health care services and the quality of life at the end of life.

The commitment of health care practitioners in and around Vermont to continuously improve the quality of health care services is truly impressive. In the sections of this report entitled *Spotlights on Improvement* we highlight the real stories of quality improvement initiatives that yield the facts and figures that are used to measure quality.

Our *Spotlights* grew three-fold this year. There is a lot more to tell than we had space for here. We would like to thank the many volunteers and their organizations who contributed data for this report and participated in writing the *Spotlights on Improvement*. We apologize to the many projects not mentioned and hope to include their work in future *Quality Reports*.

We would greatly appreciate your input on the *Quality Report*. Please feel free to contact me, Laurie Hurowitz Waite, PhD, or Cyrus Jordan, MD, at (802) 229-2152 or e-mail us at qr@vpqhc.org with your comments and suggestions. We also invite you to visit our website at www.vpqhc.org to learn more about VPQHC and our work.

David H. Gregg, Jr.
President, Board of Directors, VPQHC
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Health Care Quality - Continuous Improvement and Measurement

The Vermont Program for Quality in Health Care, Inc. (VPQHC) is a private, not-for-profit organization that works with health care professionals in Vermont and regionally to continuously improve the quality of health care for Vermonters. This is our fifth annual Vermont Health Care Quality Report. It focuses on the quality of health care services delivered to Vermonters from 1994 to 1998.

One of the purposes of this report is to measure the quality of health care services Vermonters receive. With this information we can both inform the public, as well as identify areas where we need to focus on improvement. Additionally, the report draws attention to the need to improve our measurement capacity itself.

As we have in past Quality Reports, in this report we:

• measure health care quality for Vermonters based on nationally developed indicators;
• provide comparative data within Vermont, across New England and nationally; and
• present examples of ongoing efforts to improve the health care services for Vermonters in the sections entitled Spotlights on Improvement.

Sources of information in this report

Measuring health care quality is a complex undertaking. In this report we collect existing information from many sources including administrative records like health care claims, clinical records such as hospital discharge summaries and consumer surveys. Most of the information comes from public data sets; additional information has been voluntarily provided by the major health insurers and managed care plans in Vermont.

Dimensions of quality and how we measure them

We use four dimensions to measure the quality of health care: 1) clinical status - medical assessment of physical and mental health; 2) functional status - information about how the patient is functioning, both physically and emotionally; 3) patient satisfaction with health care services; and 4) cost of care. These four dimensions have been described as the points of a compass (Nelson, et al, 1996). Ideally we would like measurements in all of these dimensions for a complete picture on the quality of care.

Clinical status. There are three ways we measure clinical status in this report:

• Standards of care - Where there is consensus about specific diagnostic or treatment protocols, e.g. all people with diabetes should have their eyes examined for retinal disease every year, we ask if these standards are being met for Vermonters who have diabetes.

• Population goals - Where there are national public health goals, e.g. by the year 2010, 75% of all adults with diabetes will have an annual eye exam, we ask if these goals are being met in the Vermont population.
Variability in the use of services - Volume or use of services (utilization) does not usually indicate how well services are delivered, but rather how many services are delivered. Since information about the use of services is more readily accessible than other clinical information for the whole population, we use volume to first find out if there is significant variation between regions of the state.

Finding regional variation is a way for us to orient ourselves and ask more specific questions. Further investigation may show that variation is due to differences in characteristics of the population, differences in environmental factors, differences in access to care, differences in the quality of care delivered, or a combination of these factors in different parts of the state.

The geographic regions that appear on the maps in this report are called hospital service areas (HSAs). The methodology of looking at small area variation was developed by Dr. John Wennberg of the Dartmouth Medical School, and has been used nationally to examine the quality of medical care in the national Medicare program (Wennberg, 1999a).

In Vermont, the definition of a HSA is based on recent history of where people in Vermont towns get their care most of the time when they are hospitalized (VDH, 1999). There are “contested” towns in Vermont, which indicates that people’s care is divided among too many hospitals to be able to declare that the town falls into a specific HSA.

Functional status. With each of us having been a patient at one time or another, we all know that physiological measures or laboratory findings alone are only a part of the picture of how well we are doing. Medical care can have a profound impact on how we function in our daily lives. Thus, part of the evaluation of quality of care are patients’ perspectives on the quality of their lives (Ware, 1993).

Satisfaction. Health care is a service industry and, like other services, part of the evaluation of the quality of the service is consumer satisfaction. A major national initiative has begun to collect common consumer satisfaction information about health care services. The intent of this effort is to provide consumers with comparative information about competing health plans (AHRQ, 2000). In Vermont, provider groups are also working together to have common measures of patient satisfaction.

Cost. Evaluating the quality of care also has a cost component. Cost includes both the direct costs of medical care and the indirect costs associated with prevention or illness, e.g. days missed from work or school.

Systems which organize measures of quality

Healthy People 2010. Since 1979, there has been a national initiative coordinated by the U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion to set goals for the health of our nation. The first generation was in the 1980s. The second generation in the 1990s set goals for the year 2000. This was called Healthy People 2000. The initiative has been recently updated to Healthy People 2010 (U.S. Department of Health and Human Services, 1990 and 2000). The Vermont Department of Health also coordinates a state level effort called Healthy Vermonters 2010.

We have adopted broad areas in Healthy People including maternal, infant and child health, heart disease, cancer, diabetes and mental health to organize the chapters of this report. Where possible, we compare Vermont performance on specific measures to the national goals set forth in Healthy People 2000 and now Healthy People 2010.

Achieving the vision of “Healthy People in Healthy Communities” represents an opportunity for individuals to make healthy lifestyle choices for themselves and their families. It challenges clinicians to put prevention into their practices. It requires communities and businesses to support health-promoting policies in schools, worksites, and other settings. It calls for scientists to pursue new research. Above all, it demands that all of us work together, using both traditional and innovative approaches, to help the American public achieve the 10-year targets defined by Healthy People 2010.

Message from the Secretary
Donna E. Shalala
U.S. Department of Health and Human Services, 2000
**HEDIS.** Most of the measures of quality and utilization of health care services that are used in the Quality Report are adapted from a system developed and continually refined over the past ten years by the National Committee for Quality Assurance (1998) called HEDIS® (Health Plan Employer Data and Information Set). HEDIS is a set of quality and utilization measures that have been applied to health care organizations that manage the care of a population of subscribers. In this report we apply these measures to the whole population of Vermonters.

The HEDIS system is designed to assist individuals or employer groups compare the quality of care delivered by different health plans. The measures allow consumers to gauge how effective a specific plan is at delivering preventative services and providing necessary treatments when members become ill. The HEDIS system includes measures of clinical status, functional status, satisfaction and cost.

**Next steps in measuring the quality of health care**

Our work has just begun in measuring the quality of health care. As you read through the spotlights in this report, you will find examples of quality improvement projects that gather information on some or all of the dimensions of quality. Our hopes for the future include:

- moving beyond utilization data for measures of clinical status, enabling us to know whether we are reaching our clinical goals, e.g. were appropriate medications delivered to hospitalized patients after a heart attack? Have the overall blood glucose levels been lowered for Vermonters who have diabetes?

- learning more about the functional status of our population to be able to determine if interventions to improve our health care system have been effective in improving our quality of life and to guide future health care policy; and

- further integration of information from all four dimensions of health care quality so that we can have a more complete picture of how well we are doing in improving care and identifying where we need to focus additional efforts.

For more information about VPQHC, or for copies of our publications, please visit our website at www.vqphc.org, call us at (802) 229-2152, or e-mail us at qr@vpqhc.org.

**FACCT is working to encourage a health care system where:**

**Consumers**
- understand the importance of quality in health care
- make decisions based on clear, reliable quality information
- provide direction to the health care system about what’s important
- balance personal and societal goals in the decisions they make

**Purchasers**
- hold the health system accountable for quality and value
- give employees and beneficiaries real health care choices
- provide information and support for quality-based decision making
- create health-focused partnerships with beneficiaries, providers and the community

**Providers and plans**
- understand what consumers want
- monitor and improve performance in the areas that matter most to the public
- mobilize consumers to become partners in their care
- compete on quality as well as price

Overall Quality and Use of Health Care Services

The measures in this section address the general cost and use of health care services by Vermonters. Measures include the overall cost of health care, hospital stays, emergency room use, same-day surgery (in the hospital) use, home and office visits and overall pharmacy use for prescription drugs. Other areas covered in this section continue to paint a broad picture of health care quality including general access to health care services, general functional status of Vermonters and their satisfaction with health care.

**Overall cost.** According to the most current figures, Vermonters spent nearly $1.8 billion annually on health care services. The largest categories of costs include: a third (35%) for hospital services (including inpatient stays and outpatient services like use of the emergency department, same-day surgery, and hospital laboratory); 18% for professional services; and 11% for prescription drugs and other medical supplies used in the home (HCA, 1999). The per capita cost of health care for Vermonters, i.e., the average cost per person, is $3,043 compared to $3,925 nationally (though the national figure includes some additional cost categories, like nonprescription drugs, see HCA, 1999).

**Overall hospitalizations.** Vermonters had almost 50,000 hospital admissions in 1998 in Vermont hospitals and border state hospitals. The admissions rate for Vermonters is well below the national average and has been steadily declining from 1994 to 1998. The national rate has remained relatively level. Elderly people use a disproportionate share of services. While those 65 years and older are 12% of the Vermont population, they use 44% of the hospital stays and their average length of stay is almost two days longer than those under 65 years old.

### Hospitalizations*

<table>
<thead>
<tr>
<th>Quality and Utilization Measures</th>
<th>1998 VT Rate</th>
<th>1997 US Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute care in general hospitals - admissions per 1,000 people (all ages)</td>
<td>83.4</td>
<td>111.1</td>
</tr>
<tr>
<td>Medical admissions (excluding maternity) (all ages)</td>
<td>46.3</td>
<td>63.5</td>
</tr>
<tr>
<td>Surgical admissions (all ages)</td>
<td>25.4</td>
<td>30.9</td>
</tr>
<tr>
<td>Maternity admissions (women ages 10-49)</td>
<td>38.3</td>
<td>56.1</td>
</tr>
</tbody>
</table>

*See Appendix for details including rates in prior years and definitions of each measure.
Overall ambulatory or outpatient services and supplies. The use of ambulatory services is generally important to note trends or changes in how people use or how providers deliver health care services. For example, an increase in use of emergency room services should be investigated to see if there is a problem in access to office care. A rise in same-day surgery may be related to changes in technology that make procedures once appropriate for a hospital stay now possible in an outpatient setting. Changes in these ambulatory measures alone do not tell us about the quality of care, but observations of change in these major service areas indicate the need for further study to understand if there is an impact on quality of care.

General access to care. One way to measure general access to care is to calculate the percent of Vermonters who have had regular ambulatory or well-care visits. Since children, young and middle-aged adults, and elderly adults have different needs for well-care visits, the measures used are specific to these different segments of the population.

Overall functional status. At this time, we present one global measure of functional status that comes from an annual survey where Vermonters report on their general health status.

Satisfaction with care. Since health care services are delivered in varied sites, including the hospital, nursing home, home, and physician’s office, some questions about consumers’ satisfaction with care may be particular to the site of care. A significant development in Vermont has been broad consensus by the providers to use common satisfaction instruments. Some of the Spotlights on Improvement describe these initiatives.

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### Ambulatory or Outpatient Services and Supplies

**Quality and Utilization Measures**

<table>
<thead>
<tr>
<th>Measure</th>
<th>1998 VT Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office, clinic and home visits per person -ages 0-64</td>
<td>3.7</td>
</tr>
<tr>
<td>Emergency room visits per 1,000 people -ages 0-64</td>
<td>196</td>
</tr>
<tr>
<td>Same-day surgery procedures per 1,000 people -ages 0-64</td>
<td>82</td>
</tr>
<tr>
<td>Drug prescriptions (and refills) per person -ages 0-64</td>
<td>5.6</td>
</tr>
</tbody>
</table>

*See Appendix for details including rates in prior years and definitions of each measure.

### Access to Care

**Quality and Utilization Measures**

<table>
<thead>
<tr>
<th>Measure</th>
<th>1998 VT Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of children who have seen a medical professional in an office, clinic or at home ages 1-11</td>
<td>89%</td>
</tr>
<tr>
<td>Percent of adults who have seen a medical professional in an office, clinic, nursing home or at home in the past three years. ages 20-44</td>
<td>89%</td>
</tr>
<tr>
<td>ages 45-64</td>
<td>92%</td>
</tr>
</tbody>
</table>

*See Appendix for details including rates in prior years and definitions of each measure.

### Functional Status

**Quality and Utilization Measures**

<table>
<thead>
<tr>
<th>Measure</th>
<th>1998 VT Rate</th>
<th>1998 US Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good to excellent health status (ages 18+)</td>
<td>90%</td>
<td>87%</td>
</tr>
</tbody>
</table>

*See Appendix for details including rates in prior years and definitions of each measure.

### Satisfaction with Care

**Quality and Utilization Measures**

<table>
<thead>
<tr>
<th>Measure</th>
<th>1999 VT Rate</th>
<th>1998 US MCO Rate**</th>
<th>1998 NE MCO Rate**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfaction with health care by members of managed care plans overall satisfaction with health care services</td>
<td>75%</td>
<td>70%</td>
<td>75%</td>
</tr>
<tr>
<td>satisfaction with personal doctor or nurse</td>
<td>73%</td>
<td>72%</td>
<td></td>
</tr>
<tr>
<td>getting needed health care as a member of a managed care plan</td>
<td>82%</td>
<td></td>
<td>74%</td>
</tr>
</tbody>
</table>

*See Appendix for details including rates in prior years and definitions of each measure.**

**US and New England managed care organizations.**
Spotlights on Improvement

Vermont Managed Care Plans: A Guide for Consumers

The Vermont Division of Health Care Administration (HCA) has published the first-ever Vermont Managed Health Care Plans: A Guide for Consumers. The guide compares the performance of Vermont’s major commercial managed care plans using data from Consumer Assessment of Health Plans (CAHPS) and Health Plan Employer Data and Information Set (HEDIS) surveys. CAHPS (AHRQ, 2000) and HEDIS (NCQA, 1999) are nationally-recognized surveys. CAHPS measures consumer satisfaction. HEDIS relies on claims data and medical records to determine whether specific standards of care are met. The data is provided annually to HCA by each commercial managed care plan in Vermont.

“Our goal in publishing A Guide for Consumers is, for the first time in Vermont, to give consumers the ability to make informed decisions when choosing between managed care plans or evaluating their current plan,” said Meg H. O’Donnell, former HCA Director of Quality Improvement and Consumer Protection. “We are encouraged by the results of our research. We found that in almost every area measured in the guide, Vermont’s managed care plans performed better than plans across the nation.”

The Vermont plans included in the report are: MVP Health Plan, The Vermont Health Plan (TVHP or BlueCare), Vermont Health Partnership (a BlueCross/BlueShield of Vermont plan) and Kaiser Permanente/CHP. Kaiser was included for comparison purposes, even though the plan has recently left the Vermont health care market.

The guide compares plan performance in a number of areas, including: Getting Care, Customer Service, Claims Handling, Women’s Health Care and Care for Children. In each area, the plans are ranked as above average, below average or average compared to the other Vermont plans. The guide also informs managed care consumers about their rights and responsibilities under state law; how to make the best use of managed care plans; how to resolve concerns with plans; and where to go for more information.

HCA intends to publish a similar guide annually. To obtain a copy of A Guide for Consumers, call HCA at (800) 631-7788, or visit the website: www.state.vt.us/bis and click on Consumer Assistance: Health Care Administration.

Consumer Satisfaction with Medicaid Health Plans

In March 2000, the Office of Vermont Health Access (OVHA) received the results of its second consumer satisfaction survey. The survey was conducted in the summer of 1999 on a scientifically selected sample of adults in Medicaid managed care plans. The survey instrument used was the Consumer Assessment of Health Plans Survey (CAHPS) which is a national survey designed to measure and report people’s experiences that form the basis of satisfaction with a health plan.

The purpose of the survey was to compare people’s satisfaction with the two Medicaid Managed Care plans in Vermont in 1999, BlueCross/BlueShield’s BlueFirst Plan and Kaiser Permanente’s Access Plus Plan. OVHA also submitted the data to the National CAHPS Benchmarking Database (NCBD) for analysis and comparative data. For comparative purposes, NCBD supplied responses of adults in Medicaid programs, as well as adults in commercially insured plans who also participated in the benchmarking project. Altogether, there were responses from almost 1,000 Vermonters in the two Medicaid managed care plans, almost 30,000 adults in Medicaid plans around the nation, and almost 170,000 adults in commercially insured plans around the nation.

NCBD prepared five composite measures for the OVHA analysis. Each of these measures was based on two to four survey questions. The five composite measures were:

- **getting needed care** - including getting a doctor or nurse you’re happy with; getting referred to a specialist; and getting the care you or your doctor think is necessary;
- **getting care without long waits** – including getting help during regular office hours; getting an appointment for an illness or injury; getting an appointment for routine care; and not waiting more than 15 minutes during an office visit;
- **communication with doctors** – including having providers listen to you, explain what you need to know; spend time with you and show you respect;
- **courteous and helpful office staff** - including office staff treating you with courtesy and respect; and office staff being helpful; and
- **customer services** - including receiving written materials that are understandable and not having problems with paperwork.

Eighty to 84% of the people in the two Vermont Medicaid Plans felt that they were getting the care they needed. This was significantly higher than the average response of adults in Medicaid (72%) plans nationally and adults in commercial plans (78%) nationally that participated in the benchmarking project. Vermonters in the two Medicaid managed care plans were also more positive about customer service (63-66% had no problems) than adults enrolled in Medicaid in other states (49% had no problems) and adults in commercially insured plans (56% had no problems).

On the last three scales, Vermonters’ reports of satisfaction were generally comparable to other populations, though one Vermont plan stood out as better, with three-quarters of the respondents always satisfied with courteous and helpful office staff. For more information, contact John B. Dick, Policy and Planning Chief, OVHA at (802) 241-3982.
Spotlights on IMPROVEMENT

VERMONT HOSPITALS BROADEN PATIENT SURVEYS

The finest clinical care in the world is meaningless if the patient is not satisfied. And “minor” inconveniences such as lack of privacy or a noisy room can change a patient’s perception of the quality of care they received. Therefore, understanding clearly how patients view their encounters with hospitals and health care providers is crucial.

Additionally, once there is information about patient perceptions, it is important to be able to compare those findings with other facilities and learn from both failures and successes. That is why Vermont hospitals began three years ago to develop a statewide patient satisfaction survey. Twelve of our 14 hospitals are using the Press Ganey patient satisfaction survey to make in-state, regional and national comparisons. Press Ganey has more than 500 hospitals as clients nationwide and so comparisons can be made with a wide variety of peer groups.

Initially hospitals started by measuring the perceptions of just inpatients. Now, however, most hospitals are also measuring responses from outpatients, emergency room patients, patients in physician offices, and even employee perceptions of the work environment.

This project was conceived as an internal quality improvement tool. Hospitals can see how they perform compared to peers, and make improvements in the areas in which they score low. But results have also been used to share best practices among Vermont hospitals. For example, Southwestern Vermont Medical Center, after receiving the highest rating in the nation for satisfaction of patients in the emergency room, provided a workshop to all Vermont hospitals on how they achieved that success.

Future plans call for publicly releasing the results of the surveys when there is enough data from all hospitals to make the report statistically valid; that should occur later this year. For further information about the project, contact Larry Gilbert, Vermont Association of Hospitals and Health Systems, (802) 223-3461 or larry@vahhs.org.

VERMONT NURSING HOMES LEAD THE NATION

During the past year, Vermont nursing homes have taken a leadership role in determining the level of resident satisfaction.

With the assistance of the Vermont Association of Hospitals and Health Systems (VAHHS) and the Vermont Health Care Association (VHCA), nursing homes licensed under Vermont Medicaid have contracted with Press Ganey, a satisfaction survey firm based in South Bend, Indiana, to develop a statewide resident satisfaction survey.

Under the agreement, residents who are in a nursing home six months or longer will be surveyed twice a year. Rehabilitation or short-stay residents who leave the facility will be surveyed shortly after returning home. The survey information will be returned directly to Press Ganey where results will be tabulated.

Twice a year, each facility will receive a report comparing responses of their resident population with the average responses of the entire nursing home community in Vermont. From the report, nursing homes will be able to focus on areas where they can improve care or their environment in order to better meet the expectations of the individuals they serve. The results of this process will provide another important dimension of quality to complement other information gathered on nursing homes in Vermont.

The statewide survey process is funded through a quality grant received by VAHHS and VHCA from the Vermont Department of Aging and Disabilities in the fall of 1999. By March 2000, thirty-seven facilities, or 81%, had signed contracts to participate and most had begun surveying their residents. It is anticipated that all thirty-seven facilities will have at least six months of survey data by August 2000. A report of this baseline data will be available this fall and will be shared with consumers via the Department of Aging and Disabilities’ web site.

This is the first project in the country where nursing homes statewide are using one satisfaction survey tool to provide them with data from their residents’ perspective.

VERMONT HOME HEALTH AGENCIES CONTINUE TO SURVEY CLIENTS

In June 2000 for the fourth year in a row, Vermont’s 13 Medicare certified home health agencies will send out several thousand patient satisfaction surveys as part of a statewide quality assurance effort. Vermont is the only state in the nation where all the Medicare-certified home care agencies participate in the same consumer satisfaction survey.

Vermont agencies have hired the research firm Parkside Associates, of Park Ridge, Illinois, to survey Vermont’s home care agencies to determine how they can assure the highest quality care for their clients. Client responses are confidential and mailed directly to the Illinois company. The statistically valid results are compared to a statewide and national database.

Survey questions address the care process, the level of patient involvement, patient education, the professional manner of staff, the overall quality of the home care service, client orientation to home care, and the client’s perception of medical outcome. Patients are asked to rate what they think of the staff and the service received, and whether or not they would recommend the agency to others. A rating scale of excellent, very good, good or fair/poor is used for a wide range of items such as whether the staff is competent, whether the information presented was clear, and whether the patient’s rights were explained and understood.

Each agency receives its own report plus a comparison to the other 12 Vermont agencies and to agencies throughout the country. The agencies use the results as a quality...
Spotlights on Improvement

assurance management tool. Agency staff learn where improvement is needed and which current practices are working well.

The Parkside consumer satisfaction survey is just one part of an extensive quality improvement effort by the home care agencies. All agencies are accredited by either the Joint Commission on Accreditation of Healthcare Organization (JCAHO) or the Community Health Accreditation Program (CHAP) of the National League of Nursing. Most agencies have also established Consumer Advisory Councils composed of consumers of a wide variety of home health services. Using a focus-group type format, the councils recommend policy and practice changes with an eye toward improvement. Vermont agencies have also all committed to registered nurse (RN) coverage twenty-four-hours-a-day, seven-days-a-week for referrals and home visiting.

Sample questions from the Overall Evaluation section of the survey include:

- How would you rate the professional manner of the staff?
- If more than one visit, rate the coordination of services over time?
- How would you rate the home health aides overall?
- How would you rate the nurses overall?
- How would you rate the overall quality of home care service?
- Would you use this same home care agency again?
- Would you recommend this agency to family and friends?

For more information contact Peter Cobb, Director, Vermont Assembly of Home Health Agencies (802) 229-0579, or visit the website: www.vnavt.com.
Maternal and Infant Health Care

In 1998, there were 6,257 babies born in the state of Vermont. Of the babies born in Vermont, 98 percent (6,116) of these babies were delivered in hospitals, and 2% (141) at home. While most Vermont women have their babies at Vermont facilities (89%), about 9% of Vermont women have their babies in New Hampshire. Altogether, Vermont women had 6,569 babies in 1998 (Vermont Department of Health, 1999b). Maternity admissions account for 14% of Vermonters’ hospital stays.

Prenatal care. Initiating care early in the pregnancy is important to identify problems and allow sufficient time for necessary interventions. The prenatal period is an important time for identifying both medical and social risks. Early care and monitoring can impact both the health of the baby, including the baby’s ability to grow and gain weight and the health of the mother. It also provides an opportunity for expectant families to learn about childbirth and newborn care.

Types of delivery. Though most births are vaginal, surgical delivery by Cesarean section (C-section) is sometimes necessary when labor is abnormal or when the baby might be injured if labor were allowed to continue. Practitioners try to avoid unnecessary C-section births because, like any surgery, there is some risk of complication.

The first time a woman delivers by C-section, it is referred to as a primary C-section. Women who have had a previous C-section are more likely to need a repeat C-section. Many women who have had a previous C-section can successfully labor and have a subsequent vaginal delivery. Such vaginal deliveries are called Vaginal Births After a C-section or VBACs.

Low birth weight. Babies who are born weighing less than five pounds eight ounces (2,500 grams) are classified as low birth weight. If they are less than three pounds five ounces (1,500 grams) they are classified very low birth weight. These babies are at increased risk of having poor health and development during infancy. The two principle causes of low birth weight in newborns are either premature birth or fetal growth retardation due to a variety of maternal or fetal problems.

Maternal-infant measures that are currently collected for the whole population using the birth certificate include: month that prenatal care began, type of delivery and percent of babies who have low or very low birth weights.

Maternal and Infant Health Care*

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<thead>
<tr>
<th>Quality and Utilization Measures</th>
<th>HP 2000 Goal</th>
<th>1998 VT Rate</th>
<th>1998 US Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women receiving prenatal care in the first trimester</td>
<td>90%</td>
<td>87.3%</td>
<td>83.0%</td>
</tr>
<tr>
<td>Cesarean section (C-section) deliveries rate</td>
<td>15%</td>
<td>17.3%</td>
<td>21.2%</td>
</tr>
<tr>
<td>Vaginal birth after C-section (VBAC) rate</td>
<td>35%</td>
<td>39.1%</td>
<td>26.3%</td>
</tr>
</tbody>
</table>

Average length of stay for hospital deliveries (women 10-49) 2.2 2.3

Low birth weight babies rate 5% 6.6% 7.6%

Very low birth weight babies rate 1% 1.4% 1.4%

*See Appendix for details including rates in prior years and definitions of each measure.
C-section Rates (Primary and Repeat) — 1998*

Ordered by Hospital — Low to High C-section Rate in 1998

Percent of Women Having a Vaginal Birth of Those Who Had a Previous C-section (VBAC) by Hospital*


State and National Rates 1994-1998*

* State rates are based on State of Vermont 1998 Vital Statistics (VDH, 1999b). National rates are based on information from the National Center for Health Statistics (Ventura, et al, 2000) which also use birth certificates as a source of information.
Five Year Trend of C-Section Rates*  
By Hospital, 1994-1998

* These trend lines represent a straight line that “best fits” the five rates from 1994 to 1998 but is not a statistical finding, based on State of Vermont Vital Statistics (VDH, 1999b).
Some Observations on Maternal and Infant Health Care
(see Appendix for detailed data)

Prenatal Care. The percent of women receiving prenatal care in the first trimester remains in the upper 80s, and continues to exceed the national rate which is in the lower 80s. The national goal is 90% by the year 2000.

Types of Delivery. Based on public information on birth certificates, the Vermont C-section rate declined slowly across the period 1994 to 1997, but rose slightly in 1998. Across the same period, the U.S. rate declined slightly from 1994 to 1996 and began increasing in 1997. The Vermont C-section rate remains consistently lower than the U.S. rates, and is approaching the national goal of 15% by the year 2000. The primary C-section rate in Vermont also remains below the national rate. The VBAC rate in Vermont is consistently above the national rate and has already exceeded the national goal of 35% by the year 2000. However, both nationally and in Vermont, the VBAC rate has been declining in recent years.

Both primary and repeat C-sections contribute to the overall C-section rate, as shown in the accompanying C-section Rates graph on page 12. In all hospitals, the majority of C-section deliveries are first time or primary, thus the overall C-section rate is closely associated with the primary C-section rate. Hospitals that have a higher VBAC rate tend to have lower repeat C-section rates.

In the accompanying graphs on page 13, the five year C-section rate trends from 1994 to 1998 are displayed for twelve Vermont hospitals. Six hospitals fall below the state average and six above in 1998. For the six hospitals below the state average in 1998, three show an overall declining trend from 1994 to 1998. One hospital shows a trend toward a rising C-section rate. Two hospitals show a flat trend line. One is flat because of little year-to-year change. Another is flat because the rate bounces around from year-to-year but the “best fit” line for the five years is relatively flat.

For the six hospitals whose rates were above the state average in 1998, four show an overall declining trend and two have relatively flat trends.

Low Birth Weight. Following the national trend, the percent of low birth weight babies has been rising slightly each year since 1995. The Vermont rate remains below the national rate but above the national year 2000 goal of 5%. Also following the national trend, the percent of very low birth weight babies has remained relatively constant across time, though it rose slightly in 1998. The Vermont rate is the same as the national rate and close to the national goal of 1% by the year 2000.

Spotlights on Improvement

VPQHC SPONSORS ANNUAL BIRTH PROJECT CONFERENCE

Since 1995, twelve hospital-based teams of doctors and nurses in Vermont have used collaborative benchmarking to learn from each other about safely reducing C-section deliveries in their hospitals. A key part of this project has been an annual conference sponsored by VPQHC that brings these teams together.

The spring 1999 conference included the three northern New England states and was sponsored by the Maine Medical Assessment Foundation, the Foundation for Healthy Communities in New Hampshire and VPQHC. That conference provided an opportunity to share successes and foster cooperation on a regional scale. We hope to continue having regional conferences every few years.

For the spring of 2000, the VPQHC Birth Project is hosting a Vermont conference designed to help our local hospital-based teams continue to build on the improvements they have already realized in maternal and infant care. The agenda will include updates on professional standards for VBAC deliveries and managing the labor process in ways that best benefit mothers and babies.

Participants will also see a demonstration of a proposed statewide maternal-infant data system called OBNET. Clinicians from Fletcher Allen Health Care (FAHC) in Burlington, Vermont and Dartmouth-Hitchcock Medical Center in Lebanon, New Hampshire are continuing to develop a web-based prototype of a database that has been in use at FAHC for the past ten years.

Special features of the system include web-based access to enter and retrieve data and a design that provides clinically useful information to practitioners. Such access can save time and costs, eliminate duplicative data-entry, and serve as an integrated and organized database to evaluate and continuously improve the quality of maternal and infant health care.

There will also be time at the conference for each hospital-based team or groups of teams with common interests to meet and work on their local quality improvement birth projects. For more information, contact Barbara Thompson-Snow, Director of Quality Improvement, VPQHC, (802) 229-2152 or e-mail Barbara.Thompson-Snow@vpqhc.org.
THE VERMONT REGIONAL PERINATAL PROGRAM – HIGH RISK MOTHERS AND BABIES

In 1973, Dr. Jerold Lucey of the University of Vermont and Dr. George Little of Dartmouth College established the “High Risk Infant/Mother Care Project” as a medical program supporting perinatal health care services in Vermont and New Hampshire. Their expectation was that a regional network would substantially reduce neonatal mortality by emphasizing local recognition and treatment of high-risk perinatal events. The Project supported outreach education and a specialized emergency transport system for newborns.

The Project split to form two state based programs in 1979. Since then, the Vermont Regional Perinatal Program (VRPP) has supported the delivery of risk-appropriate perinatal care for women and infants in hospitals throughout Vermont and northeastern New York State.

VRPP has been instrumental in bringing two nationally recognized training and certification programs to participating hospitals. The first program is the Perinatal Continuing Education Program (PCEP), a self-paced program geared for nurses and physicians who are involved in the care of infants in the perinatal period. The second program is the Neonatal Resuscitation Program (NRP), a hospital based training program developed by the American Heart Association and the American Academy of Pediatrics. In addition to these programs, VRPP organizes day-long workshops for clinicians on the care of high risk mothers and newborns and facilitates meetings for nurse managers from hospital obstetric units as a network for learning and dialogue.

An important quality of VRPP has been the regular, on-site outreach education provided to community hospitals in the form of transport conferences and perinatal statistics review. A perinatal team from Fletcher Allen Health Care (FAHC), the tertiary care center in Burlington, Vermont, conducts a joint conference with the local physicians and nurses. Cases referred to the FAHC high risk obstetrics service or the neonatal intensive care unit are reviewed to understand the positive and negative aspects of those interventions, and to identify ways to improve the appropriateness, timeliness, and care delivered during those referrals. A confidential annual review of perinatal statistics with comparisons to regional and national benchmarks is also conducted.

The Vermont Regional Perinatal Program receives funding from the Vermont Department of Health, the University of Vermont, and the community hospitals which it serves. Central Vermont Medical Center, Copley Hospital, North Country Hospital, Northwestern Medical Center, Porter Hospital, Rutland Regional Medical Center and two hospitals in New York currently participate in the program. For more information contact Mary Ingvoldstad, BSN, (802) 847-4276 or e-mail: Mary.Ingvoldstad@vtmednet.org.

THE VERMONT OXFORD NETWORK – NEWBORNS IN INTENSIVE CARE

The Vermont Oxford Network is a collaborative, voluntary network of neonatologists and other health care professionals representing over 350 institutions from North America and around the world. The non-profit network is supported by membership fees, research grants and contracts. The primary philosophy of the Vermont Oxford Network is to improve the effectiveness and efficiency of medical care for newborn infants and their families through a coordinated program of research, education and quality improvement projects.

In support of all three aspects of this program the network maintains a database for infants with birth weights of 401 to 1,500 grams born at participating centers or admitted to them within 28 days of birth. Members of the Vermont Oxford Network complete brief data forms using standardized definitions. Strict attention is paid to maintenance of data quality. The database provides core data for network clinical trials, is used for observational studies and outcomes research, and generates reports for members comparing their performance with that of other neonatal intensive care units (NICUs) in the network. These reports are produced quarterly and are intended for use in local quality management efforts.

In 2000, the Vermont Oxford Network Database will enroll approximately 30,000 infants weighing 401 to 1,500 grams from over 350 institutions; in the 9-year period 1990 to 1999, over 125,000 infants will have been enrolled in the Network Database. A major advantage of participating in the Network Database is that comparisons among NICUs based on uniform definitions are then possible.

The Vermont Oxford Network has also been working since the early 1990s to adapt and apply collaborative quality improvement methods to neonatal intensive care. The Network’s initial collaborative improvement project, known as the NIC/Q Project, involved multidisciplinary teams from 10 institutions. Teams consisting of neonatologists, neonatal nurses, administrators, allied professionals and quality improvement coaches from the institutions worked closely together to set common improvement goals, identify “potentially better practices” for achieving those goals and implement the practices in their own NICUs.

The preliminary results of the project demonstrate significant reductions in nosocomial or hospital acquired infections (6 institutions) and chronic lung disease (4 institutions) in the subgroups that focused on those goals when compared to themselves over time and when compared to a comparison group of 66 non-participating units that were members of the Network during the same time period. In addition, the costs of care for very low birth weight infants at the 10 NIC/Q sites declined over the course of the project.

As a result of this initial experience the Vermont Oxford Network has now organized an expanded Evidence-Based Quality Improvement Collaborative for Neonatology, NIC/Q 2000. This collaborative, comprised of multidisciplinary teams from 34 member institutions, is applying
Spotlights on Improvement

four key improvement habits to a broad range of clinical, operational and organizational improvement goals. The four key improvement habits are:

• The habit for change - Change is extremely difficult both for individuals and for organizations; yet without change there cannot be improvement. The focus is on rapid trial and learning cycles with measurable improvement goals.

• The habit for evidence-based practice - Participants learn to evaluate the strength and quality of the evidence for different practices and to apply the principles of evidence-based medicine in their daily practice.

• The habit for collaborative learning - This involves collaboration among the disciplines and specialties within an institution and among multidisciplinary teams from different institutions.

• The habit for practice as process - This habit involves systems thinking and understanding that neonatal intensive care involves complex processes involving many people and organizational subsystems. By analyzing the processes of care it is possible to redesign them to be more effective and efficient.

Monitoring the implementation of and adherence to evidence-based processes of care within an institution provides a powerful method for quality improvement that in many instances is quicker, more practical and more efficient than monitoring outcomes alone.

The participants in NIC/Q 2000 are contributing the results of their learning to a growing archive of improvement knowledge maintained by the Vermont Oxford Network, which is currently being organized into an internet site, www.NICQ.ORG. For additional information about the Vermont Oxford Network, please contact: A. Lynn Stillman, Network Administrator, (802) 865-4814, or e-mail lynn@vtoxford.org.

AFTER THEY GO HOME – CONTINUING MATERNAL-INFANT CARE AT PORTER HOSPITAL

It can be a daunting experience when a new family heads home from the hospital birthing center. They are often exhausted and have been flooded with information about safe baby care, mother’s needs to recover from the delivery, correct car seat use, community resources, and many other issues. In 1995 a staff nurse at Porter Hospital took a look at how much teaching was being squeezed into an ever shortening hospital stay. She also noticed that mothers were resisting a free home visit by the Public Health nurse. What was missing was a bridge between the hospital discharge after delivery and the first visit to the primary care physician.

The nurses at Porter Hospital designed a post partum visit program modeled after one developed at Greenwich Hospital in Connecticut (Weinberg, 1994). Since April 1996, the Porter Care Connection program has offered families a scheduled return visit to the obstetrical unit of the hospital 2 to 3 days after discharge. Both mother and baby receive a physical assessment, and the mother receives information and emotional support. They may also receive referrals to physicians, public health nurses or social services. A visit by phone is also an option.

Data is collected on participation rates, breast and bottle feeding, and referrals generated from the visits. Participation has ranged from 77% to 87% for all deliveries; and 94% for first-time parents. A small drop in this rate in the past year has been attributed to families who have already participated with an earlier child and did not feel the need to again.

Mothers complete a brief evaluation form after the visit. Their comments have included:

• The hospital visit after was great because we were having a hard time breastfeeding and the nurse got us back on track.
• I really like this program. This is my third child, and my first had many problems. I honestly think if there was a program like this in 1991, some of those problems could have been prevented. Thank-you.
• It gave us a chance to realize things that had been taught to us, but had been overwhelming initially.
• This is a wonderful program! Many questions come up after the first few days at home and could be addressed during the visit.

The staff at Porter Hospital feel that the Porter Care Connection is an integral part of helping parents adjust to parenthood and the new family unit. It provides support, and can identify problems early, preventing re-admissions. They feel that it is a valuable service to the community. For more information contact Susan Hogan, RNC, IBCLC, Porter Hospital, (802) 388-4720.
Children generally use health care services regularly when they are young, especially during their first year, and less frequently in their adolescent years. General categories of children’s health care include well-child care (regular preventive-care pediatric visits), neonatal care for sick newborns (usually born with congenital anomalies or born prematurely), treatment for injuries, hospital care for children with serious illnesses and surgery including the insertion of tubes to treat persistent ear infections.

Immunization. Promoting healthy behavior, preventing illness and screening for health problems are core components of pediatric health care. Immunization is one of the most successful forms of preventive care for children. It reduces the occurrence of several common and serious bacterial and viral infections.

Respiratory disease. Respiratory diseases are the leading reason why children under age 18 are hospitalized in Vermont. Other major causes for hospitalization for children are gastrointestinal disorders and common surgeries such as tonsillectomy and appendectomy.

Measures that are currently available for the whole population are immunization rates and hospital stays for respiratory infections and asthma. Some of these hospitalizations are considered preventable by early treatment and the appropriate use of medications.

### Health Care for Children and Adolescents

<table>
<thead>
<tr>
<th>Quality and Utilization Measures</th>
<th>HP 2000 Goal</th>
<th>1998 VT Rate</th>
<th>1998 US Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children with complete immunization by age 2</td>
<td>90%</td>
<td>87%</td>
<td>81%</td>
</tr>
<tr>
<td>Adolescent immunizations - two doses measles by end of 7th grade</td>
<td>97%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total pediatric respiratory infections and asthma - admissions per 1,000 children (ages 0-17) (map)</td>
<td></td>
<td>3.1</td>
<td>(1997 US) 7.6</td>
</tr>
</tbody>
</table>

*See Appendix for details including rates in prior years and definitions of each measure.*

### Some Observations on Childhood and Adolescent Health Care

**Immunizations.** The childhood immunization rate in Vermont continues to climb a point annually and is approaching the year 2000 national goal of 90% for children. Vermont rates are higher than national rates, but national rates also continue to climb annually.

**Pediatric respiratory infections and asthma.** While the overall state rate of pediatric respiratory infection and asthma hospitalizations has consistently declined in Vermont from 1994 to 1998, the national average has stayed relative constant and high. In 1998, regional variation in Vermont was clearly reduced compared to prior years. While this a broad indicator and includes pediatric hospitalizations for respiratory infections as well as asthma, the reduced variability and overall decline in hospitalizations may be attributable, at least in part, to the statewide and local initiatives to improve the quality of care for children with asthma described in the *Spotlights.*
Pediatric Respiratory Infections and Asthma

1998 age-adjusted rate of hospitalization per thousand residents under age 18

The most common respiratory conditions resulting in hospitalizations for children are asthma, bronchitis and pneumonia. A small number of less common infections are also included.

1998 State Average
Total Discharges = 432
Rate = 3.1 per 1,000
Average Length of Hospitalization = 3.3 Days

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<tr>
<td>A. Central Vermont</td>
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<td></td>
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<tr>
<td>B. Chittenden</td>
<td>3.1</td>
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<td>2.2</td>
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<td>C. Copley</td>
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<td>D. Gifford</td>
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<tr>
<td>E. North Country</td>
<td>8.2</td>
<td>6.2</td>
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<tr>
<td>F. Northeastern</td>
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<td>11.1</td>
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<td>1.6</td>
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<td>H. Porter</td>
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<tr>
<td>I. Rutland</td>
<td></td>
<td>6.4</td>
<td>5.8</td>
<td>4.7</td>
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<tr>
<td>J. Southwestern</td>
<td>12.1</td>
<td>7.4</td>
<td>7.6</td>
<td>6.1</td>
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<td>K. Springfield</td>
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<td>L. Upper Ct Valley</td>
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<td>M. Windham</td>
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<tr>
<td>State Rate</td>
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<td>4.3</td>
<td>3.7</td>
<td>3.1</td>
<td>3.1</td>
</tr>
</tbody>
</table>

Rates on this map represent the number of hospitalizations per thousand Vermont residents who live in a geographic region of the state. The geographic area is called the hospital service area (HSA). These rates do not reflect where care is actually delivered.

Statistical significance, measured at the .05 level, is highlighted in either red (above the state average) or blue (below the average). In these areas, the regional rate is significantly different from the overall statewide rate. All of the HSA rates are age-adjusted to account for the different population mixes in different regions of the state.
The Vermont Child Health Improvement Project (VCHIP) is a population-based, child health services research and quality improvement program of the University of Vermont. The program's mission is to optimize the health of Vermont children by initiating and supporting measurement-based efforts to enhance private and public child health practice. VCHIP has received a grant from the David and Lucille Packard Foundation to implement a program of quality improvement for preventive services in pediatricians' offices.

The first phase of this project is the Vermont Preventive Services Initiative. The Vermont Preventive Services Initiative is part of a national effort to improve the quality of health care delivered to children and adolescents. The National Initiative for Children’s Healthcare Quality. In Vermont, VCHIP will begin a statewide clinical preventive service improvement project, in collaboration with the Vermont Chapter of the American Academy of Pediatrics, the Vermont Agency of Human Services, the Vermont Department of Health, VPQHC, and the University of Vermont’s Department of Pediatrics, to assist primary care practices in increasing the provision of preventive services to children.

The specific project objectives are:

- establish a program to measure regularly the delivery of preventive services in all pediatric practices in Vermont;
- provide regular feedback to pediatric practitioners about their level of performance in preventive services;
- develop practice-specific strategies for improvement through collaborative meetings among providers and individualized work within practices in Vermont;
- sustain improvement efforts through the development of collaborative networks for preventive services improvement among pediatric practices in Vermont; and
- expand the program of in-office and collaborative quality improvement to the majority of Vermont pediatric and additional family medicine practices in Vermont.

Members of the VCHIP Senior Advisory Group include: Richard “Mort” C. Wasserman, MD, MPH, Jeffrey Horbar, MD and Wendy Davis, MD. For more information contact Judith Shaw, RN, MPH, Director, Vermont Child Health Improvement Project, UVM College of Medicine, (802) 847-4220 or e-mail Judith.Shaw@vtmednet.org.

**PEDIATRIC ASThma INITIATIVE – OVHA AND VPQHC**

The Office of Vermont Health Access (OVHA), Vermont’s Medicaid program, continues to work with VPQHC to support the statewide effort to optimize care for children with asthma. In 1998, VPQHC purchased and distributed a copy of the *Practical Guide for the Diagnosis and Management of Asthma* (Public Health Service, 1997) to every physician, nurse practitioner and physician’s assistant in the state who treat children with asthma.

VPQHC has also participated in local discussions with practitioners to gather information about available resources and obstacles to implementing recommendations in each community. VPQHC is working with these communities and OVHA to plan interventions to improve asthma care in Vermont.

For additional information, contact Cyrus Jordan, MD, MPH, at VPQHC, (802) 229-2152 or e-mail Cyrus.Jordan@vtmednet.org.

**COMMUNITY-WIDE TEAM IN SOUTHWESTERN VERMONT TACKLES ASTHMA MANAGEMENT**

If one person can make a big difference, what happens when a diverse and committed team becomes unified around a common goal? They might just change the way an entire community thinks about and responds to a significant health issue!

The Asthma Management Team at Southwestern Vermont Health Care in Bennington, Vermont has been just such a group, increasing public awareness about asthma and encouraging universal adherence to asthma management guidelines. A team comprised of physicians, respiratory therapists, nurses, a pharmacist and administrators from Southwestern Vermont Medical Center (SVMC), and nurses from Benning Area Home Health, the Southwest Vermont Supervisory Union schools and the Department of Public Health, represents the needed cross-section to get the job done.

The guidelines, which were established by the National Institutes of Health (Public Health Service, 1997) in response to a continuing rise in asthma diagnoses and complications, cover the four essential components of asthma management:

- pharmacological - proper use of anti-inflammatory and maintenance medications;
- environmental - reduction of smoke, dust, pet hair, molds and other irritants;
- monitoring and assessment - keeping a close check on symptoms and their progression; and
- educational - teaching patients, parents, daycare providers, teachers, coaches and health care providers what they can do to control asthma better.

“For the most part, asthma is an outpatient illness,” says Lynn Steller, RRT, the asthma educator at SVMC. “So while the hospital may have initiated this team, we knew that change needed to be community-based, so it was a full team effort right from the start.”

Jane Verderosa, RN, the nurse at Bennington Elementary School, cites the standardized Asthma Action Plan form as a particularly helpful tool that the team developed. This form is now used by the hospital, doctors’ offices, school nurses and other health care providers and caregivers throughout the area. “By sharing information in this way, we all have the chance to
stay better informed about the affected child’s condition, and to be prepared to take appropriate action should that be necessary,’ Verderosa explains.

The combined efforts of the schools, other community organizations, home health and hospital staff have also resulted in an impressive downturn in asthma-related admissions, according to Steller. “We’ve focused our education here on all asthma patients coming in to the Emergency Department, many of whom might have been able to avoid the visit had they had more information about how to handle the episode at home,” she says.

“Comparing statistics from the fourth quarter of 1998 and the fourth quarter of 1999, we had 22 percent fewer Emergency Department visits and 55 percent fewer inpatient admissions. Any way you look at it, that’s pretty remarkable! And any way you look at it, none of us could have achieved it alone.” For more information, contact Lynn Steller at (802) 447-5170.

CHILDREN’S ASTHMA PROJECT AT FLETCHER ALLEN HEALTH CARE

In the spring of 1996, a group of professionals who care for children with asthma was assembled to look at asthma care at Fletcher Allen Health Care (FAHC) and beyond. The group consisted of nurses, physicians, respiratory therapists and a pharmacist. The goal of the group was to examine asthma care for children who are hospitalized with asthma at FAHC and create a plan for optimal care. Once the project was started, the scope widened to include outpatient care, home care and school.

Since asthma is a chronic illness, it requires constant management. This management is best done as a partnership among those who live with and care for the child. Families have said they benefit when a team works to prepare a plan to help manage the disease. A team includes the parents, primary care provider (pediatrician, family practitioner, nurse practitioner), school nurse, teachers and coaches.

FAHC has created an educational initiative focused on providing tools for the team to use to manage the asthma. FAHC has also partnered with the Vermont Lung Association to enhance opportunities for families. These include one-day seminars called Super Saturdays and asthma camp.

The project has also begun to build bridges across the state. An asthma information packet, which was developed with input from the families, has been mailed to every school nurse in the state, and every pediatrician and the Visiting Nurse Association in Chittenden County. The results have been overwhelmingly positive from all parts of the state and region.

Outcome measures for the project include hospital length of stay; hospital re-admission rate, use of the emergency department after an asthma hospitalization; use of peak flow meters at home; days of school missed, unplanned office visits; and family satisfaction with the educational materials. For more information about the project, contact Anna Noonan, VP for Quality and Care Management, (802) 656-2468.

THE CENTRAL VERMONT HOSPITAL ASTHMA IMPROVEMENT PROJECT

At Central Vermont Hospital in Berlin, Vermont, it was noted in early 1999 that many patients were coming to the Emergency Department (ED) with symptoms of asthma. A project was undertaken to decrease the number of ED visits and to improve the quality of life for patients with asthma.

A multi-disciplinary group was brought together consisting of three physicians, two nurses, a respiratory therapist, a home health nurse and two members of the quality assurance department. In order to assess the current problem, they developed a survey and gave it to patients who had come to the ED with asthma symptoms.

The team found that frequently, patients were not using peak flow meters, did not have adequate education, repeatedly had come to the ED with asthma symptoms, and did not have an action plan based on peak flow meter readings. The team decided that both the physicians and the patients needed to be educated. Several steps were taken to address these problems:

- a patient educational booklet was developed and distributed to all primary care physician offices, as well as to asthma patients who had come to the ED;
- a one-page “management guideline” was put together by the team based on national standards and was distributed to both primary care providers and ED physicians;
- a flow sheet was made and distributed to primary care offices which could be put in the chart and would remind the provider to assess and treat the patient in the best manner; and
- in addition to holding a conference for office staff, the team visited local primary care offices to help the physicians and staff find ways to optimize the care of their patients with asthma.

Although the project is still in progress, patients and physicians in the central Vermont region have clearly been better educated as to the standards of optimal asthma care. For more information contact Anthony Williams, MD, (802) 229-1703.

NORTH COUNTRY HOSPITAL’S PEDICULOSIS PROJECT

In the fall of 1999, many schools in the northern region of Vermont were experiencing head lice outbreaks. One school was even closed for several days. North Country Hospital (NCH) in Newport, Vermont, became aware of the need for a pediculosis prevention and control project during a meeting with school nurses and calls from physician offices asking what services were available in the community for these cases. There were none.

In most instances, the same cases re-surfaced with recurrent or unresolved head lice problems. School nurses felt strongly that it about 20 cases, hands-on, one-to-one help in the home to assist with tasks that resolve pediculosis was required. The NCH Community Health Planner received a grant...
from the NCH Community Fund for the development and implementation of a Pediculosis Prevention and Control Program.

NCH collaborated with the Newport District Office of the Vermont Department of Health to provide training to the paraprofessionals, called Family Helpers, who would be doing the home visiting. Various consent, intake, and reporting forms were developed and necessary supplies and equipment were purchased. In December 1999, letters of information with a one-page summary of the service went out to all school nurses, principals and primary health care providers in the NCH service area. Referrals were, and continue to be received from school personnel as well as from health care providers.

For identified cases, the project provides approximately 25 hours of in-home service. While the focus of the Family Helper’s work is to provide education to the family about pediculosis and how to resolve it, in some cases the tasks are carried out more than once by the Family Helpers themselves. In addition, the Family Helpers have reading materials and a calendar to track when tasks should be done. These materials are easy to understand and are left with the families.

In the course of developing the program, it was found that there are many myths and unfounded attitudes in the community regarding head lice. To help turn this around and put out factual information for the community at large, NCH embarked upon a “Keep Your Wits, Not Your Nits” media campaign. High school seniors taking a health careers class wrote and recorded radio ads which ran for two weeks. NCH’s Community Health Planner wrote a series of six info-ads that were printed weekly in two local papers. A favorable response was received regarding both the radio and newspaper campaign.

Anticipated project outcomes in the current school year, 1999-2000, include:

• fewer outbreaks of pediculosis;
• decreased student absenteeism due to pediculosis;
• fewer, if any, school closing due to pediculosis;
• reduced teacher/school personnel time spent checking students heads;
• some resolution of those cases which have recurrent or unresolved head lice problems; and
• the opportunity for involved parties to collaborate on a more long-term approach to this problem which has shown itself to be ongoing throughout most communities in the NCH region.

To date, six families (and a lot more heads!) have been served. The problem has been resolved in four cases. Family Helpers are still involved in two cases. Additional referrals are in progress. For more information, contact Joanne Fedele, RN, MS, Community Health Planner, North Country Hospital, (802) 334-3208, or e-mail jfedele@nchsi.org.
Heart Disease and Stroke

Heart disease includes a wide range of disorders from acute conditions such as heart attacks to chronic conditions such as heart failure. One in every five hospitalizations in Vermont is for the diagnosis and treatment of heart disease or stroke. They are also the leading causes of death, accounting for a third (36%) of Vermonters’ deaths.

The most common underlying cause of heart disease and stroke is atherosclerosis, a condition that results in narrowing of the arteries. Atherosclerosis does damage to all blood vessels, but the effect on the blood vessels supplying the heart muscle and the brain cause the most frequent and serious problems.

Several well-documented risk factors are associated with atherosclerosis. These include being overweight, smoking cigarettes, lack of exercise, high blood pressure, high blood cholesterol, diabetes, and a family history of heart disease or stroke. One component of care for heart disease and stroke is screening for and minimizing these risk factors.

**Angina pectoris.** When the blood flow in the arteries serving the heart is partially blocked, a person can experience a specific type of chest pain called angina pectoris. When the blood flow is completely blocked, part of the heart muscle dies causing an acute myocardial infarction, or AMI (commonly referred to as a heart attack).

**Heart failure.** A chronic form of heart disease is called heart failure. Heart failure occurs when the heart muscle has been damaged and can no longer effectively pump blood to the rest of the body. Heart failure has many causes the most prevalent being atherosclerosis.

**Cardiac procedures for diagnosis and treatment.** To view the flow of blood through the coronary arteries and determine the best course of treatment, a diagnostic procedure called a cardiac catheterization is sometimes performed.

Health care practitioners have a powerful array of medical and surgical treatments to offer patients with an AMI. Medical treatments include drugs that can either dissolve clots that are blocking the blood flow to the heart muscle, prevent more clots from developing or control irregular heart rhythms.

The two most common types of heart surgery are performed at referral centers such as Fletcher Allen Health Care, Dartmouth-Hitchcock Medical Center and centers in Albany, New York. One is an open chest procedure called coronary artery bypass graft (CABG) which uses grafted blood vessels to bypass blocked arteries. The second is a less invasive procedure called percutaneous transluminal coronary angioplasty (PTCA) which involves treating the obstruction mechanically by using catheters and stents threaded into the obstructed arteries to open blocked vessels.

**TIA and stroke.** A temporary decrease in the blood supply to the brain can result in a transient ischemic attack (TIA). A major interruption can lead to permanent damage and is commonly referred to as a stroke. Blockage of the carotid arteries, the major blood supply to the brain, can be surgically treated through a procedure called a carotid endarterectomy.
Measures that are currently available for the whole population to evaluate the quality of care for heart disease and stroke look at the frequency of disease and the use of surgical procedures. New evaluative techniques such as looking at whether blood pressure is controlled among adults who have high blood pressure and the use of appropriate medications for people who have an AMI, will be available in the near future for those Vermonters enrolled in managed care plans. Currently, the measure on advising smokers to quit is now available for Vermonters enrolled in managed care plans.

### Heart Disease and Stroke*

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<th>Quality and Utilization Measures</th>
<th>1998 VT Rate</th>
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<td>63%</td>
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*See Appendix for details including rates in prior years and definitions of each measure.

**US and New England managed care organizations.
THE NORTHERN NEW ENGLAND CARDIOVASCULAR DISEASE STUDY GROUP

The Northern New England Cardiovascular Disease Study Group (NNECDSG) is a unique collaborative committed to continuously improving the quality, safety, effectiveness and cost of medical interventions in cardiovascular disease. It is a regional, voluntary consortium that was founded in 1987 in order to provide information about the management of cardiovascular disease in Maine, New Hampshire, Vermont and Massachusetts. Members include Beth Israel Deaconess Medical Center in Boston, MA; Catholic Medical Center in Manchester, NH; Dartmouth-Hitchcock Medical Center in Lebanon, NH; Eastern Maine Medical Center in Bangor, ME; Fletcher Allen Health Care in Burlington, VT; and Maine Medical Center in Portland, ME.

The NNECDSG maintains registries for all patients receiving coronary artery bypass grafting, percutaneous coronary interventions and heart valve surgery. During the past twelve years, data on more than 88,000 procedures have been collected and analyzed. The group includes cardiologists and surgeons, groups of perfusionists, nurses, anesthesiologists and administrators. They meet three times a year to review data, plan studies and improve care. Efforts have focused on answering three questions:

• The patient wants to know from the surgeon: What are my chances?
• The surgeon wants to know: How am I doing and how can I improve?

To answer these questions the NNECDSG:

• has developed decision-making tools to examine the long-term benefits and short-term risks of different revascularization procedures;
• uses data feedback; and
• initiates quality improvement projects.

The NNECDSG’s current quality improvement initiative uses existing clinical science along with quality improvement methods and their regional collaboration to reduce mortality from heart failure after CABG surgery. Heart failure was found to be the major cause of death after CABG surgery. This initiative is funded by the American Heart Association.

Executive members at Fletcher Allen Health Care include: Bruce J. Leavitt, MD, Associate Professor of Surgery, Matthew W. Watkins, MD, Associate Professor of Medicine and John Brumsted, MD, Chief Medical Officer. Executive members at Dartmouth-Hitchcock Medical Center include: David J. Malenka, MD, Associate Professor of Medicine, William C. Nugent, MD, Professor of Surgery, John F. Robb, MD, Associate Professor of Medicine, and Paul B. Gardent, MBA, Vice President of Mary Hitchcock Memorial Hospital and Dartmouth Hitchcock Clinic.

For more information about the NNECDSG, contact Cathy S. Ross, MS, Research Associate, (603) 650-1956.

NORTHEAST HEALTH CARE QUALITY FOUNDATION’S WORK IMPROVING CARE FOR PEOPLE WITH HEART FAILURE

The Northeast Health Care Quality Foundation (NHCQF) is a non-profit, educational health care organization which contracts with the national Health Care Financing Administration (HCFA) to serve as the Medicare Peer Review Organization (PRO) for Maine, New Hampshire and Vermont. The Foundation works collaboratively with health care providers throughout the three states to ensure that Medicare consumers are receiving the highest quality health care. As part of its current contract the Foundation is working with PROs nationwide to improve the care of patients with heart failure.

The goal of the national heart failure initiative is to improve the care of heart failure patients in the hospital setting. Specifically, the goals are to increase the use of appropriate diagnostic tests to evaluate left ventricular systolic dysfunction (LVSD) and to increase the use of angiotensin converting enzyme inhibitor (ACEI) for heart failure patients with an ejection fraction (EF) less than 40%. On a national level, a systematic random sample of 800 records for patients discharged from April and September 1998 with a principal diagnosis of heart failure was selected for each state. The Foundation supplemented the national sample with additional records so that hospital specific analyses could also be performed.

The performance rate on the national heart failure indicator, ACE inhibitors prescribed at discharge was:

• 78.3% in the national sample of over 31,000 eligible patients;
• 83.3% in Vermont (in the supplemented sample);
• 81.4% in Maine; and
• 87.1% in New Hampshire.

A similar pattern was seen in tri-state comparisons of other important heart failure indicators, such as ejection fraction testing and initiation of ACE inhibitors, i.e., Vermont performance rates slightly higher than Maine and lower than New Hampshire, and all three states above the national average.

The Foundation is also working with HCFA’s Boston regional office and eight other PROs on a pilot project to improve heart failure care in the outpatient setting. The Foundation is recruiting both primary care and cardiology practices to participate in the project. For practices participating in the project, the Foundation will collect information from a random sample of medical records for their heart failure patients. These data will be analyzed to assess levels of adherence with current guidelines and to prioritize improvement strategies. The Foundation will support practices in integrating new tools and processes into their current office systems and in re-measuring guideline adherence after improvement processes have been implemented.

For more information on this project or other quality improvement projects, contact Lawrence D. Ramunno, MD, MPH, Director of the Health Care Quality Improvement Program, NHCQF; (800) 772-0151.
VPQHC HEART FAILURE PROJECT

In 1998, VPQHC’s Board of Directors initiated a statewide project to improve the care of Vermonters with heart failure. VPQHC, with the help of many practitioners in Vermont and New Hampshire adapted Heart Failure: Management of Patients with Left Ventricular Systolic Dysfunction (Konstram, et al, 1994) into a new document, Clinical Management of Heart Failure in Vermont (VPQHC, 1999a). To date, the recommendations have been distributed to clinicians around the state who treat people with heart failure. In most communities around the state, a local cardiologist has met with the local practitioners to discuss key recommendations and gather information about local resources and obstacles to improving care. In this next year VPQHC will:

• update the clinical recommendations including very recent and significant findings about new drug treatments;
• work with hospital and community leaders to develop a collaborative benchmarking process modeled after the VPQHC Birth Project; and
• continue to work with administrative data sets to establish baseline measurements on the utilization of services and the quality of care for people with heart failure in Vermont.

For a copy of the current recommendations visit the website www.vpqhc.org, or contact Patti Warman, VPQHC, (802) 229-2152, or e-mail Patti.Warman@vpqhc.org.

GIFFORD MEDICAL CENTER’S HEART FAILURE INITIATIVE

Gifford Medical Center in Randolph, Vermont took advantage of an accelerated quality improvement project with the Hitchcock Clinical Alliance. The project began in 1996. Project accomplishments include the development of standing orders, clinical pathways and patient education materials. Nurses provide telephone management follow-up.

The effect of this project was an improved process for the management of patients with heart failure that resulted in lower costs while clinical, functional and satisfaction indicators improved or remained the same. For more information contact Marilyn Sargent, Director of Quality, Gifford Medical Center, (802) 728-4441 or e-mail Msargent@GiffordMed.org.

HEART FAILURE INITIATIVE AT SOUTHWESTERN VERMONT MEDICAL CENTER

Recognizing that heart failure (DRG 127) was our highest re-admission diagnosis, Southwestern Vermont Medical Center (SVMC) initiated a disease management plan for heart failure in October 1997. Over the course of the next two years, the plan developed into a successful integration of physician and nursing interventions that has reduced length of stay and re-admission rates beyond our goal.

Nursing intervention was multifold. The initial objective was to bring information to members of the nursing departments that provide care for patients with heart failure. From there, the aim was to empower the staff to develop principles of care for this population based on new or updated scientific data. Out of this developed the standard of care that included daily weights on all patients admitted with heart failure, provision of scales for home use to patients who did not own or have access to scales, and a standardized inpatient education program so consistent information would be passed to patients and families.

Medical intervention focused initially on ACE inhibitor use for all patients with an ejection fraction of 40% or less. Subsequently, the use of beta blockers in this population was added to our criteria. In the course of two years, our 30-day readmission rates have dropped an average of 25%. Sixty day re-admission rates have been reduced from 29% to 3%. ACE inhibitor use has averaged between 86-100% compliance and beta blocker use is slowly rising to between 46 and 51%.

There are two areas we still see room for improvement. First is optimizing ACE inhibitor doses. We currently track only the use, not the dosage of drug. It is not clear whether target doses are being reached. Secondly, we would like to find a mechanism to bring the inpatient education program to heart failure patients earlier in their disease. We strongly believe that with education and support early in the cycle of this illness, we can have an impact on helping to improve the quality of life for people suffering with this chronic disease.

For more information contact Barbara Richardson, MS, RNC, CCRN, Clinical Nurse Specialist/CHF Outcomes Manager, Southwestern Vermont Medical Center, (802) 442-6361 or e-mail BMR@phln.org.

FLETCHER ALLEN HEALTH CARE’S CASE MANAGEMENT APPROACH

In 1999, through grant support from the University of Vermont/Fletcher Allen Health Care (FAHC) Office of Patient Oriented Research, the FAHC-Care Management Office, in Burlington Vermont, began a case controlled study to measure the effect of case management on heart failure patients.

Clinical and patient satisfaction data measures are being followed. A nurse case manager oversees and reinforces the treatment plan and monitors patient’s condition via a telephone follow-up. The case manager’s role is based on published evidence (Vinson, et al, 1990) that hospitalization in elderly patients with heart failure may be preventable in up to 50% of cases through improved patient education, comprehensive discharge planning and enhanced follow-up. Models from other institutions were also examined.

The completion target date of the study is July 2001. Outcomes measured include re-admission rates, emergency department visits, adherence to the treatment plan, optimizing pharmaceutical doses, cost comparisons, and patient satisfaction.

An additional collaborative project with participants from FAHC, Chittenden County Visiting Nurses Association, Franklin County Home Health Association,
and Northwestern Medical Center is striving to improve standards of care for patients with heart failure. For additional information contact Susan Levinsky, RN, MPH, Clinical Improvement Coordinator, (802) 847-4927, or e-mail Susan.Levinsky@vtmednet.org, or Ann Laramee, RN, MS, Heart Failure Case Manager, e-mail Ann.Laramee@vtmednet.org.

**NORTHWESTERN MEDICAL CENTER’S WORK IMPROVING CARE**

Northwestern Medical Center (NMC) in St. Albans, Vermont began their heart failure project in May 1999. The program first took a look at common quality of care measures, then moved to implementing several specific changes. In the hospital, specific protocols were developed for physicians and nurses. Patients also are now enrolled in a case management program coordinated by a nurse case manager. Referrals are accepted from both inpatient admissions as well as physician offices. Tools have been developed for patient education and weight monitoring. Patients are also encouraged to participate in a group education program consisting of two two-hour classes.

The NMC program is also tightly coordinated with the Fletcher Allen Health Care (FAHC) heart failure case management program since many NMC patients receive specialized services at FAHC. For more information, contact Sandra Robinson, MS, RN, CETN, Process Improvement Manager, Northwestern Medical Center, (802) 524-1205, or e-mail srobinson@nmncinc.org.

**RUTLAND REGIONAL MEDICAL CENTER’S HEART FAILURE PILOT PROGRAM**

Rutland Regional Medical Center (RRMC) in Rutland, Vermont implemented a heart failure pilot program from October 1997 to September 1998. A standard of care was developed utilizing national guidelines. The emphasis for physicians was placed on the diagnostic work-up to establish the etiology for heart failure and the appropriate treatment and management. The nursing emphasis was on patient education and the case management aspects of this patient population. Standing orders, clinical pathway, heart failure algorithm, patient teaching plan and home care instructions were developed and utilized. Nursing Case Managers facilitated the program.

Patients enrolled in the program consistently showed improved outcomes as opposed to those patients not enrolled. After further education for physicians and nursing staff, a focused re-evaluation of the program showed improved outcomes for all patients admitted with heart failure. Analysis of the program showed a statistically significant improvement in the quality of care that is cost effective based upon measurable outcomes. The staff is continuing to evaluate the program and make changes as required. For more information contact Donna Thurston, RN, Cardiology Case Manager, (802) 747-1615.
Some Observations on Heart Disease and Stroke
(see Appendix for detailed data)

**Angina and chest pain.** While both in Vermont and nationally there is a slow but steady decline in hospitalizations for angina and chest pain, there remains variability from region to region within the state. Some areas hospitalize only one person for every thousand in the region while others average 3 to 4 people per thousand.

**Heart failure.** The rate of hospitalizations for people with heart failure has been declining slightly in Vermont since 1994 and remains clearly below the national rate. In 1996 and 1997, there was very little variation between regions of the state; but 1998 showed some variation. Some local heart failure quality improvement initiatives and the statewide initiative were just getting underway in 1998, so their effects should begin to show up in future reports.

**Cardiac catheterization.** The use of cardiac catheterization services during hospital stays, for patients who did not have a PTCA or CABG during the same stay, appears to have peaked in 1995 and has been declining slightly every year since. We would need additional information to know if this is an overall decline in catheterizations, or if this represents a shift in this service to the outpatient setting. While one region continues to have rates higher than the state average, there appears to be a closing of the gap as rates in that area have declined more rapidly than the overall state rate.

We do not have comparable national data for hospitalized people who had a catheterization but no PTCA or CABG.

We can compare people hospitalized who had a catheterization and may have had other cardiac procedures as well, to the national rates. Vermont's rate of inpatient catheterizations in this case is about half of the national rate.

**Angioplasty (PTCA).** The rate of PTCA's in Vermont has been rising across the period 1994 to 1998 and appears to be approaching the national average. Two regions in Vermont continue to have a higher than average rate and the gap appears to be getting wider between the state average and the rates in these regions.

**Coronary artery bypass graft (CABG).** There is very little variation in the rate of CABG's across all regions of Vermont. The overall rate has been relative steady across time, with a slight downturn in 1998. The Vermont rate is consistently lower than the national rate.

**Stroke and other cerebrovascular diseases.** The rate of hospitalizations has been relatively consistent across time statewide and nationally. Vermont rates are consistently lower than national rates. From 1994 to 1998 one region of the state has had a consistently higher rate than the state average.

**Carotid endarterectomy.** Since 1995, the Vermont and national rates have remained relatively constant and similar. While there was a two year period where one region was higher than the state average, in 1998 there was no variation from one region of the state to another.
Angina and Chest Pain
1998 age-adjusted rate of hospitalization per thousand residents of all ages

Angina is the pain someone experiences when there is insufficient oxygen supplied to the heart muscle (myocardial ischemia). Chest pain is included in this category because at the time of admission to a hospital, angina cannot always be differentiated from other causes of chest pain.

1998 State Average
Total Discharges = 1,303
Rate = 2.2 per 1,000
Average Length of Hospitalization = 1.9 Days

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Rates on this map represent the number of hospitalizations per thousand Vermont residents who live in a geographic region of the state. The geographic area is called the hospital service area (HSA). These rates do not reflect where care is actually delivered.

Statistical significance, measured at the .05 level, is highlighted in either red (above the state average) or blue (below the average). In these areas, the regional rate is significantly different from the overall statewide rate. All of the HSA rates are age-adjusted to account for the different population mixes in different regions of the state.
Heart Failure

1998 age-adjusted rate of hospitalization per thousand residents age 65 and older

Heart failure is a chronic disease resulting from damaged heart muscle. The weakened heart no longer effectively pumps blood to the rest of the body. There are many causes of heart failure including advanced age and previous heart attacks.

1998 State Average
Total Discharges = 1,142
Rate = 15.7 per 1,000
Average Length of Hospitalization = 4.6 Days

Rates on this map represent the number of hospitalizations per thousand Vermont residents who live in a geographic region of the state. The geographic area is called the hospital service area (HSA). These rates do not reflect where care is actually delivered.

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Cardiac Catheterization

1998 age-adjusted rate of hospitalization per thousand residents age 45 and older

Cardiac catheterization involves introducing a catheter through the major artery in an arm or leg and threading the catheter upstream into the left chamber of the heart, the major outflow vessels, and into the coronary arteries that supply blood to the heart muscle itself. A diagnostic catheterization is done to determine whether the patient has coronary artery disease (a narrowing or obstruction of the arteries serving the heart itself).

1998 State Average
Total Discharges = 1,004
Rate = 4.8 per 1,000
Average Length of Hospitalization = 4.4 Days

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Cardiac Catheterization

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‡Does not include hospitalizations where there was a PTCA or CABG procedure in the same stay.
Angioplasty (PTCA)‡
1998 age-adjusted rate of hospitalization per thousand residents ages 45 and older

PCTA (percutaneous transluminal coronary angioplasty) is a cardiac catheterization that is performed to correct obstructions in the coronary arteries. PTCA involves threading a catheter into the left chamber of the heart, the major outflow vessels, and into the coronary arteries that supply blood to the heart muscle itself. Catheter attachments are manipulated to repair the blocked artery.

1998 State Average
Total Discharges = 963
Rate = 4.6 per 1,000
Average Length of Hospitalization = 3.7 Days

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‡Does not include hospitalizations where there was a CABG procedure in the same stay.
Coronary Artery Bypass Graft (CABG)
1998 age-adjusted rate of hospitalization per thousand residents age 45 and older

CABG is a major surgical (open chest) procedure using grafted veins or arteries to bypass obstructed coronary arteries that deliver oxygen to the heart muscle.

1998 State Average
Total Discharges = 618
Rate = 3.0 per 1,000
Average Length of Hospitalization = 10.3 Days

Rates on this map represent the number of hospitalizations per thousand Vermont residents who live in a geographic region of the state. The geographic area is called the hospital service area (HSA). These rates do not reflect where care is actually delivered.

Statistical significance, measured at the .05 level, is highlighted in either red (above the state average) or blue (below the average). In these areas, the regional rate is significantly different from the overall statewide rate. All of the HSA rates are age-adjusted to account for the different population mixes in different regions of the state.
Stroke and Other Cerebrovascular Diseases
1998 age-adjusted rate of hospitalization per thousand residents age 65 and older

Both stroke and transient ischemic attack (TIA) are the result of a decrease in the flow of blood to the brain. In the case of TIA, the decrease is temporary. An interruption that leads to permanent damage is commonly referred to as a stroke.

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<tr>
<td>State Rate</td>
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<td>13.9</td>
<td>14.0</td>
<td>13.7</td>
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1998 State Average
Total Discharges = 946
Rate = 13.0 per 1,000
Average Length of Hospitalization = 5.7 Days

Rates on this map represent the number of hospitalizations per thousand Vermont residents who live in a geographic region of the state. The geographic area is called the hospital service area (HSA). These rates do not reflect where care is actually delivered.

Statistical significance, measured at the .05 level, is highlighted in either red (above the state average) or blue (below the average). In these areas, the regional rate is significantly different from the overall statewide rate. All of the HSA rates are age-adjusted to account for the different population mixes in different regions of the state.
Carotid Endarterectomy
1998 age-adjusted rate of hospitalization per thousand residents age 65 and older

Obstruction of the carotid arteries, the major blood supply to the brain, can be surgically corrected by a procedure called a carotid endarterectomy. This procedure can prevent stroke.

1998 State Average
Total Discharges = 218
Rate = 3.0 per 1,000
Average Length of Hospitalization = 3.2 Days

Rates on this map represent the number of hospitalizations per thousand Vermont residents who live in a geographic region of the state. The geographic area is called the hospital service area (HSA). These rates do not reflect where care is actually delivered.

Statistical significance, measured at the .05 level, is highlighted in either red (above the state average) or blue (below the average). In these areas, the regional rate is significantly different from the overall statewide rate. All of the HSA rates are age-adjusted to account for the different population mixes in different regions of the state.
**Behavioral Health Care**

Behavioral health care is a general term for services aimed at diagnosis and treatment of mental illness and chemical dependency. Behavioral health providers care for people with a wide variety of problems – ranging from grief or anxiety in response to a major life event to severe illnesses such as major depressive disorder or schizophrenia. Chemical dependency includes such problems as alcoholism and the misuse of prescription and illegal drugs. It is also referred to as substance abuse.

Mental health care treatments include psychotherapy, which typically consists of counseling and helping people cope with their problems, and drug therapies such as antidepressants. Severe illnesses require hospitalization for intensive treatment and support.

Measures that are currently available on the whole population to evaluate the quality of behavioral health care services show the proportion of the population who use behavioral health services at hospitals or outpatient settings. Information on new evaluative techniques such as monitoring antidepressant medication management for adults diagnosed with depression, will be available in the near future for Vermonters in managed care plans.

**Behavioral Health°**

<table>
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<th>Quality and Utilization Measures</th>
<th>1996 VT Rate</th>
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<td>Behavioral health hospitalizations - admissions per 1,000</td>
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<td>Average length of stay for behavioral health admissions all ages</td>
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<tr>
<td>Percent of people receiving outpatient mental health services - ages 0-64</td>
<td>6.7%</td>
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<tr>
<td>Percent of people receiving outpatient services for chemical dependency - ages 0-64</td>
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*See Appendix for details including rates in prior years and definitions of each measure.*

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**Spotlights on IMPROVEMENT**

**The Use of Medication in the Psychiatric Treatment of Young Children**

Recent research reports have described an apparent increase in the use of medication in the psychiatric treatment of very young children. However, existing studies address fairly specific populations, and the findings do not necessarily represent national experience or trends. In response to the published data, David Fassler, MD, Clinical Director of Otter Creek Associates, a statewide multidisciplinary group practice, and Joe Jacobs, MD, Medical Director of the Office of Vermont Health Access (OVHA) sought to evaluate local practice patterns. Working with Pat House, PhD and Russell Frank from OVHA, they initiated an analysis of Vermont Medicaid data.

Preliminary review suggests that Vermont physicians are less likely to prescribe medication for the psychiatric treatment of very young children than physicians in the previously published study samples. Drs. Fassler and Jacobs are currently analyzing the data to ascertain whether or not the children who did receive medication also received other mental health interventions. They are also implementing an effort to disseminate national practice recommendations and provide continuing education on this topic for Vermont physicians.

The goal of the project is to ensure that young children with psychiatric disorders have appropriate access to comprehensive mental health assessment and treatment services. Additional information is available from Dr. Fassler at dgfoca@aol.com.
Performance Improvement at the Brattleboro Retreat - Focus on High Risk Events

The Brattleboro Retreat, a psychiatric and addiction treatment system in Vermont, not only passed its JCAHO (Joint Commission on Accreditation of Healthcare Organization) accreditation survey in December 1999, but became the only hospital in Vermont to achieve commendation status. The surveyors cited the strong performance improvement (PI) initiatives as one chief reason for that recognition. The work involved in building PI initiatives is described here.

In 1997 two inpatients, in separate incidents, committed suicide, and HCFA (Health Care Financing Administration) investigation revealed that the Retreat had weak efforts in performance improvement. A new administration committed the Retreat to an ambitious PI program with regular reports to the Board of Trustees, monthly steering committee meetings (initially twice monthly) attended by all leaders plus several other key individuals, local PI councils reporting to the Steering Committee, and carefully crafted annual work plans focusing on high frequency and high risk events.

Because of highly publicized deaths of children and adolescents who were placed in seclusion and/or restraint in Connecticut, we decided to pay special attention to seclusion and restraint as potentially high risk events. The goals of the project were to:

- reduce the frequency of use of seclusion and restraint, and
- increase the use of therapeutic holds (versus more intrusive or dangerous methods of seclusion and restraint).

Physicians, nursing leadership and other clinicians conducted intensive staff education about de-escalation techniques and other alternatives to seclusion and restraint. Nursing leadership modified forms documenting seclusion and restraint in order to capture relevant data and trends including medication usage, alternative strategies attempted, and others. Seclusion and restraint episodes dropped 36% in 1999 compared to 1998, and the proportionate use of therapeutic holds increased 16%.

In summary, the Chief Executive Officer (Mr. Richard Palmisano) set a high priority on PI, and demonstrated his commitment by regularly attending the Steering Committee. The Senior Vice President of Medical Affairs (Dr. Frederick Engstrom) and the Medical Staff President (Dr. Allan Shirks) led the Retreat’s PI process. The leadership of the Child and Adolescent Program (Dr. William Knorr, Ms. Nancy Gordon, Mr. Gary Henry, Ms. Laurie Palmisano) worked with the entire staff to create a safer and more therapeutic environment.

For more information, contact Frederick W. Engstrom, MD, Senior Vice President of Medical Affairs, Brattleboro Retreat, (802) 258-6182.

Vermont Department of Developmental and Mental Health Services Restructuring Overview

High quality service delivery is at the crux of the Department of Developmental and Mental Health Services’ (DDMHS) mission. As such, in the fall of 1995, the Department, along with consumers, family members, providers, and advocates, embarked on a restructuring planning effort intended to improve the quality of services provided to its three primary populations:

- persons with developmental disabilities;
- adults with mental illness and other significant mental health needs; and
- children and adolescents with severe emotional disturbance or other significant mental health needs and their families.

As a result of this long-term restructuring planning effort, the Department has recently implemented a number of new quality improvement mechanisms, described in the five sections below.

Enhanced oversight of providers. The Department contracts with sixteen private, non-profit agencies that are designated to act as the single point of accountability for ensuring that services are available to eligible persons in need within their geographic area. In 1998, the Department promulgated administrative rules that detail the fundamental administrative and service capacities organizations must have to be designated by DDMHS, and the Department will use these criteria to review agencies for re-designation every four years. In addition, each of the Department’s Divisions has updated the procedures used for programmatic reviews conducted at each agency every one to two years to assess service quality.

New tools for quality improvement. Information on system performance is now being collected through consumer and family satisfaction surveys, and consumer outcomes, such as increased employment/education and decreased involuntary care and legal involvement, are being targeted for ongoing measurement and reporting.

Treatment guidelines based on empirically based knowledge about effective service delivery for three major mental illnesses: schizophrenia, bi-polar disorder, and depression have been developed nationally. Guidelines for additional mental illnesses are currently under development. The intent of the guidelines is to encourage the consistent use of effective treatment approaches statewide and to provide informational documents for consumers and families regarding the nature and rationale for treatment approaches. The Division’s biennial service quality reviews will include an assessment of the use of these guidelines within agency practices.

Increased role for consumers and family members. The Department strongly believes that input and oversight by service recipients and their families is a crucial tool for increasing quality for care. The mental health statute in Vermont was amended in 1998 to require that the Governing Board of each designated agency be comprised of 51 percent consumers and
family members. In addition, the new Agency Designation Administrative Rules require that the Department and each designated agency have a program standing committee for each DDMHS population served, comprised of a majority membership of consumers and family members. These State and Local Standing Committees review and advise on statewide and local performance regarding management, service quality, service planning and implementation, resource allocation, policies, and grievance resolution. The Statewide Standing Committees also are responsible for reviewing information and making recommendations to the Commissioner regarding agency re-designation.

**Collect better information.** The Department is currently implementing a new managed care information system (MCIS) which will connect its 16 provider agencies directly with the Department to provide, in a timely manner, necessary data for decision-making regarding provider and service effectiveness. This new MCIS will enable the Department for the first time to have a single integrated database that contains all needed information on who is served by whom, when, at what costs, and with what outcomes. These data can then be used to guide decisions throughout the system, including the dissemination of frequent management reports for department and provider staff, and specialized reports for quality assurance/quality improvement activities.

**Flexible funding based on need.** The Department has changed its funding mechanisms to allow more flexibility and decision-making at the local level regarding how funds can best be used to meet consumers' service and support needs. For services for people with serious mental illness, the Department has moved from fee-for-service funding to a case rate system, where providers are paid a monthly rate based on intensity of need for each individual they serve. Under this case rate system, providers must manage within their global case rate budget, but they also have the flexibility to deliver whatever services are needed by an individual, regardless of whether the person or service is Medicaid eligible.

For a number of years, funding for people with developmental disabilities has been managed by the Department based on an administrative review of each person's individual need. However, under the restructuring efforts, decisions regarding services and amount of funding are now being made at the local provider level, using a uniform statewide process, to maximize consumer and family input and provider knowledge of the individuals and their needs. Also, both the serious mental illness and developmental disability provider systems now share financial risk with the Department, another mechanism intended to maximize effectiveness of limited public funds and increase quality of care.

For additional information about these initiatives contact Susan Besio, PhD, Deputy Commissioner, DDMHS, (802) 241-2354, e-mail sbesio@ddmhs.state.vt.us, or visit the DDMHS website: www.state.vt.us/dmh.
Cancer

Cancer is a general term for hundreds of different diseases. Normally, body cells divide to produce more cells only when we are young and growing or when cells in certain tissues need replacement. When cells become cancerous, they become abnormal and begin to replicate themselves without control or order. Excess tissue often develops. This is referred to as a tumor.

Some tumors are very aggressive and invade surrounding tissues and migrate (metastasize) to other parts of the body. These tumors are referred to as malignant or cancerous. Others do not invade surrounding tissues or metastasize. These tumors are referred to as benign and generally are not as dangerous as malignant tumors unless they are contained in a limited space such as inside the skull or spine.

The Vermont Department of Health has released a comprehensive report, Cancer in Vermont (VDH, 2000a), that details rates of newly diagnosed cases and rates of death for common cancers, such as breast, colorectal, lung and prostate cancer.

Health care practitioners routinely screen (test) patients if they are thought to be at risk for various types of cancer. Screening methods used to detect cancer include:

**Mammography.** The most effective method of screening for breast cancer is by taking an X-ray of each breast, a mammogram, in combination with a clinical breast exam by a health professional. Breast tumors can also be detected by self-examination. Current recommendations for breast cancer screening are for women to start having a mammogram in conjunction with a clinical breast exam by a health care provider every one to two years starting at either age 40 or age 50. Women who are at higher-than-average risk of breast cancer sometimes need more frequent screening and/or need to begin screening at an earlier age.

**Pap smear.** Pre-cancerous conditions and the early stages of cervical cancer can be detected by regular Pap smears. Pap smear screening consists of obtaining a sample of cervical cells and surveying the sample under a microscope for abnormal cells. Nationally, this screening method has contributed to a significant decline in the occurrence of invasive cervical cancer and deaths from cervical cancer.

**Fecal occult blood test.** A fecal occult blood test (FOBT) is performed by examining a fecal sample for blood. Fecal samples can be obtained by the patient at home or at the time of a digital rectal exam which physicians perform to search for existing rectal tumors. Several organizations recommend that the FOBT be done annually, beginning at age 50.

**Colonoscopy and sigmoidoscopy.** The most accurate and effective method for the detection of colon cancer and pre-cancerous polyps is colonoscopy. A colonoscopy allows physicians to examine the entire large bowel. A sigmoidoscopy is a more limited exam. Pre-cancerous tumors called polyps can be removed during these procedures. Many physicians recommend every person have a colonoscopy at age 50. People at risk for colon cancer should begin screening tests at an earlier age.

Measures that are currently available for the whole population in the area of cancer care are limited to screening measures.
Cancer

Some Observations on Cancer
(see Appendix for detailed data)

**Mammography.** The percent of women age 50 or older who have received breast cancer screening in the past two years continues to rise and remains close to the national average (the median rate among the states). About three-quarters of women have received this screening, which exceeds the national goal of 60% by the year 2000.

**Pap smear.** The percent of women age 18 and older who have received cervical cancer screening in the past three years remains close to the national average and the national goal of 85%.

**Colorectal cancer screening.** The most recent data in Vermont indicates that the Vermont and U.S. rates for people age 50 and older receiving a fecal occult blood test every two years falls well below the national goal of 50%. In Vermont the national goal of 40% of people 50 and older ever receiving a sigmoidoscopy has been achieved. The goal for 2010 is 50%.

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<td>Breast cancer screening - ever had a mammogram (women ages 40+)</td>
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<td>84%</td>
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<td>77%</td>
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<td>Cervical cancer screening (Pap smear) in past 3 years (women ages 18+)</td>
<td>85%</td>
<td>90%</td>
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<td>85%</td>
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<td>Colorectal cancer screening - fecal occult blood testing in past 2 years (50+)</td>
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<td>Colorectal cancer screening - sigmoidoscopy ever done (50+)</td>
<td>40%</td>
<td>50%</td>
<td>40%</td>
<td>38%</td>
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*See Appendix for details including rates in prior years and definitions of each measure.*
A new study released in February, 2000 by the Vermont Department of Health revealed that Vermont has more colorectal cancer than the rest of the U.S., but that breast cancer rates are similar to other states. “The findings in this report are very important,” said Dr. Jan Carney, Vermont’s health commissioner. “For the first time, we have Vermont-specific information about cancer incidence in Vermont.”

The report, Cancer in Vermont, contains an analysis of the first three years of cancer incidence data collected by the Vermont Cancer Registry, 1994-1996. The registry is a central bank of information on all cancer cases diagnosed and treated in Vermont since 1994. The report shows that for most types of cancer, the incidence rates for both men and women are not statistically different than the U.S. rates. There are a few exceptions:

- for women, the rates of colorectal cancer, cancer of the larynx, cervical cancer and multiple myeloma are all worse than the U.S. rates; and
- for men, the rates of lung cancer and cancer of the larynx are both worse than the U.S. rates.

“Although the news about colorectal cancer is not good, there is something that can be done about it,” said Carney. “Colorectal cancer is almost entirely preventable. It develops slowly and can be prevented or detected early with screening tests.” According to Carney, the higher than average colorectal and cervical cancer incidence rates are both prime targets for consumer education about prevention and the importance of regular cancer screening.

Carney said, “The report also shows the damaging effects of tobacco use. The incidence rate for lung cancer and cancer of the larynx are both statistically worse than the U.S. rates, and lung cancer continues to be the leading cause of cancer death for both men and women.”

From 1994 to 1996, a total of 3,998 new cases of cancer were diagnosed in Vermont females and 1,711 died from cancer. During that same time period, 3,995 new cases of cancer were diagnosed in Vermont males and 1,806 died. The female death rate is not statistically different from the U.S. rate; however, the male rate is statistically worse.

For a copy of the report, call the Vermont Department of Health, Cancer Registry, (800) 464-4343, ext. 7749, or (802) 865-7749, e-mail VT.CancerRegistry@vdh.state.vt.us or visit the website: www.state.vt.us/health.

**Spotlights on IMPROVEMENT**

**NEW CANCER STUDY RELEASED BY VERMONT DEPARTMENT OF HEALTH**

The Vermont Chapter of the American College of Surgeons began a statewide quality improvement project in April of 1999 to optimize the care of Vermonters with colorectal cancer. Nearly all the surgeons who perform colorectal surgery on Vermonters are participating in the project. VPQHC is providing the Chapter with administrative support and peer review protection.

A process was developed to collect information about pre-surgical status, events at the time of surgery and postoperative outcomes on every patient undergoing surgery for colorectal cancer. VPQHC has been generating an aggregated progress report every six months that is distributed to all participating surgeons. The report includes information about the location and extent of the cancer, co-existing health problems of the patients and type of surgery performed. Complications occurring during the surgery or in the first month of recovery are reported, as are additional radiation and/or chemotherapy treatments.

Regular feedback allows practitioners to assess their processes and outcomes, compare their practices to professional standards and to each other, institute improvements and monitor the effects of their improvement efforts.

Findings from the surgeons’ study show that Vermonters are receiving high-quality care for the treatment of colon cancer. An additional focus of the project is to assess whether cancer is being detected early by screening tests or if the disease is being detected only when it has progressed far enough to cause symptoms. Cure rates and survival rates for colon cancer are very good if it can be detected early before symptoms occur. The detection of pre-cancerous lesions prevents the disease from ever occurring.

Nationally, as well as in Vermont, there is an effort to improve screening and early detection of colon cancer. In Vermont, the Department of Health is leading such an initiative. For more information about the Vermont Chapter of the American College of Surgeons study, contact Sue Fulton at VPQHC (802) 229-2152, or e-mail Sue.Fulton@vpqhc.org. For more information about screening initiatives contact Jean Ewing, Cancer Control Chief, Vermont Department of Health, (802) 863-7331.

**DARTMOUTH-HITCHCOCK MEDICAL CENTER COMPREHENSIVE BREAST PROGRAM**

The Comprehensive Breast Program (CBP) is a relatively new initiative of Dartmouth-Hitchcock Medical Center. Twenty years ago, breast cancer was viewed as a single disease with a fairly standard surgical treatment. Today, it is seen as a spectrum of disease with a dizzying array of treatment options, involving many clinical specialists. Even a
brush with this disease, such as finding a lump that ultimately proves to be benign, can be terrifying. The mission of the CBP is to support women and their families during times of need and to coordinate the activities of the many specialists involved in breast care.

The CBP is comprised of a multidisciplinary team, with representatives from all specialties involved in breast care. The team is committed to providing comprehensive and coordinated care, so that patients can remain focused on their health. The CBP offices are shared by E. Dale Collins, MD, Medical Director, Peter A. Kaufman, MD, Medical Oncologist, Mary Mrozek-Orlowski, ARNP, Oncology Nurse Specialist, Margaret V. Cole, MSW and Laurel Ludy, MSW, Breast Care Coordinators, and Naomi Hartov, BS, Program Assistant.

Through these offices, the CBP coordinates the specialized breast care available in Radiology, General and Plastic Surgery, Pathology, Medical Oncology and Radiation Oncology. A weekly Breast Conference (Tumor Board) provides an open forum where clinicians from all specialties can review diagnoses and individualize treatment plans.

In addition to the team of specialists, the CBP office staff plays a critical role in the care of patients with breast cancer, including coordinating appointments, retrieving outside radiographs, pathology specimens and medical reports, and directing patients to the other resources available within the program and the medical center.

Understanding the level of stress that a diagnosis of breast cancer can bring, the CBP offers the services of specialized social workers to patients with breast cancer and their families. These specialists provide emotional support, answer questions, listen to patient and family concerns and advocate for the patient. They also facilitate Turning Points, a support group for women with breast cancer and teach regular breast self-examination classes.

Other support services of the CBP include physical therapy and prosthesis fitting. There is also a lymphedema program, staffed by therapists specially trained in the management of arm swelling that can occur after breast surgery. The Familial Cancer Program is available to counsel women and their families about breast cancer risk.

Working with the patients’ personal physicians, the CBP strives to deliver care as close to the patient’s home as possible through outreach hospitals and clinics in New Hampshire and Vermont. The CBP also participates in a number of national breast-cancer support programs such as Look Good, Feel Better and Reach to Recovery.

Plans to evaluate the impact of the CBP and its interventions include a patient survey and measurement of clinical characteristics and outcomes. The survey will be sent to a sample population of breast care patients to understand their experience with individual components of the program as well as broader issues of communication and coordination. A clinical database has been developed that incorporates the measurement of clinical outcomes to include clinical staging, presenting diagnostic features, recurrence and clinical trial enrollment among a larger set of data. The CBP team will review the results of these measurement activities on a regular basis to assess the effectiveness of the program and target opportunities for improvement.

For more information about the Comprehensive Breast Program, visit the website: www.hitchcock.org/cbp.

VERMONT MAMMOGRAPHY REGISTRY UPDATE

The Vermont Mammography Registry (VMR) as part of the Vermont Breast Cancer Surveillance System has received five more years of funding from the National Cancer Institute to continue our research on effective breast cancer screening. The VMR continues to provide quality assurance reports for participating radiologists and facilities. All breast imaging and pathology facilities in Vermont contribute data to the registry.

One of our new studies, led by Dr. Susan Harvey, a radiologist at Fletcher Allen Health Care, will evaluate the usefulness of additional mammographic views and/or ultrasound as adjuncts to mammographic screening views in the diagnosis of breast cancer. Radiologists assume that additional imaging improves diagnostic accuracy, however, there are no previous studies that confirm this finding for screening mammography.

It is important to investigate the use of additional imaging in view of the costs, both financial and emotional, associated with these procedures. We will use images created in the clinical setting and transfer these to a test setting to evaluate the differences in sensitivity and specificity for various imaging combinations. Additional aims of this study are:

- to evaluate accuracy differences between the clinical and test settings;
- to identify descriptors from all combinations of imaging that are most predictive of breast cancer;
- to identify characteristics of standard screening views that predict improved accuracy when adjunct imaging is used;
- to demonstrate any changes in extent of disease observed; and
- to describe findings associated with ductal carcinoma in situ with and without associated invasive cancer.

For more information contact Berta Geller, EdD, Principal Investigator, Vermont Breast Cancer Surveillance Consortium, UVM, (802) 656-4115.
Diabetes

Diabetes is a metabolic disease that occurs when a person's body does not make enough of the hormone insulin or cannot use insulin effectively. Both conditions result in an elevated level of glucose (sugar) in the blood. The high blood glucose level of diabetes is associated with a wide variety of complications involving the eyes, heart, brain, kidneys, legs and feet. If left untreated, diabetes can cause blindness or kidney failure. It can also produce circulatory damage that leads to amputation of the feet or legs. People who have diabetes are at extremely high risk for heart disease and stroke. With appropriate and rigorous management by both healthcare practitioners and people who have the disease, many potential complications of diabetes can be reduced or avoided. Too often, however, people are diagnosed with diabetes when complications are already present.

The American Diabetes Association (ADA) recognizes two general categories of diabetes, type 1 and type 2. People with type 1 diabetes secrete no insulin of their own and are dependent on insulin injections to control their blood glucose level. In the much more common type 2 diabetes, insulin is secreted, but not in sufficient amounts or the body's response to insulin is diminished.

The Vermont Department of Health (VDH), has compiled a comprehensive analysis of facts associated with diabetes, including the prevalence, hospitalizations, complications, deaths and costs associated with diabetes in Diabetes in Vermont: A Review of the Data, 1999 (VDH, 1999-2000). In the report, it is estimated that 19,000 adult Vermonters have been diagnosed with diabetes and another 6,500 to 19,000 Vermonters have the disease but do not yet know it. The total economic burden of diabetes (for known cases) is estimated at $250 million per year. This includes both direct costs for the medical care and indirect costs such as lost days at work (VDH, 1999-2000).

High-quality diabetes care involves use of periodic monitoring techniques to detect excessive blood glucose levels and evidence of disease progression in vulnerable body systems. Monitoring includes:

- blood glucose tests to monitor the effect of diet, exercise and medical therapy;
- eye exams to detect retinal disease;
- foot examinations for loss of sensory nerve function and early identification of skin breakdown;
- blood pressure measurements;
- testing for kidney disease by detecting protein in urine samples; and
- blood cholesterol and lipid measurements.

Diabetes care also includes regular checks by health care providers to be certain that the people with diabetes participate in diabetes self-management education programs. These programs help people:

- understand the disease and their medication regimes;
- understand how eating an appropriate diet, exercising, and quitting smoking are essential to controlling the disease; and
- understand how to perform daily checks on blood glucose levels and examine their feet.

The only measure that is currently available for the whole population to evaluate the quality of care for people with diabetes is a measure of the percent of people with the disease who have an annual dilated eye exam. New evaluative techniques including population information on long term blood glucose control with a hemoglobin A1c (HbA1c) laboratory test for people with diabetes are currently being piloted in Vermont.

Observations on Diabetes
(see Appendix for detailed data)

Annual dilated eye exam. In Vermont, the rate of people with diabetes who have their eyes examined annually exceed both the national goal for the year 2000 of 70% and the 2010 goal of 75%. The Vermont rate of 79% also exceeds the national rate of 56%.
Since 1996 the Vermont Department of Health (VDH) has been working with funds from the Centers for Disease Control and Prevention (CDC) in Atlanta, GA, to address the issues of quality of care to reduce the burden of diabetes in Vermont. Four major areas of focus and activities associated with the Diabetes Control Project in Vermont are:

- **Improving care** – Under a contract with VDH, VPQHC continues to work with local practitioners, national recommendations, and current research to update the original 1998 version of the Recommendations for Management of Diabetes in Vermont (VPQHC, 1999b). Updates include new sections on exercise, obesity, vaccines, screening, and gestational diabetes. (See VPQHC Spotlight.)

There has also been an increase of diabetes-related quality improvement activities in the local communities in response to the community assessments completed last year.

- **Improving the ability to evaluate progress** - The VDH has developed the manual Diabetes in Vermont: A Review of the Data (VDH, 1999–2000), which provided a baseline against which gains in the effort to reduce the burden of diabetes in Vermont can be measured.

- **Improving self-management of diabetes** - There has been a 50% increase (from 8 to 12), in the number of sites where Life with Diabetes, a comprehensive diabetes self-management course, is conducted.

In addition, the Vermont Association of Diabetic Educators (VTADE), working with VPQHC and VDH, developed a shorter, self-management course called Survival Skills for Diabetes (VTADE, VPQHC, VDH, 2000). (See the next Spotlight for more details.)

- **Improving public and provider education** - DAWN (Diabetes Awareness Wellness Network), a broad coalition of providers, policy-makers and consumers, continues its work to promote reducing the burden of diabetes in Vermont. There will be a conference on diabetes in October 2000.

For more information, contact Lynne Dapice, MS, RN, Diabetes Control Program Coordinator, Vermont Department of Health at (802) 865-7708.

**SURVIVAL SKILLS FOR PEOPLE NEWLY DIAGNOSED**

Diabetes is a chronic disease that affects a person for a lifetime. Self-management education to assist the individual control his or her diabetes has been shown by numerous studies to be a cost-effective intervention to improve the quality of care. Self-management education involves a continuum of services ranging from teaching survival skills to comprehensive self-management to intensive management.

The American Diabetes Association (ADA) provides “recognition status” to diabetes self-management programs that meet their quality standards. There are currently four ADA recognized programs in Vermont. In an effort to increase access to quality diabetes education, the Vermont Association of Diabetes Educators (VTADE) has developed a mentoring program to assist fledgling programs in meeting a Vermont standard. To date, nine programs have been mentored. This mentoring has helped to increase the number of sites statewide that offer the comprehensive self-management education program.

Despite these efforts, diabetes education is not accessible to all newly diagnosed patients throughout Vermont. In order to provide access to initial diabetes education the Survival Skills for Diabetes curriculum and training program was developed. The project is a collaborative effort between VTADE, the VDH Diabetes Control Program and VPQHC. The program includes:

- a brochure for patients newly diagnosed with diabetes on which the provider can add information about local Survival Skills Education Programs;
- a Survival Skills booklet for patients;
- a Survival Skills curriculum for diabetes educators;
- a Survival Skills training program for diabetes educators; and
- quality improvement data forms to track program outcomes.

A pilot training session was held in January 2000 to prepare diabetes educators in every region of the state. Additional training opportunities are planned for the spring and summer of 2000. The goal is for sites to offer Survival Skills twice a month so...
that all Vermonters diagnosed with diabetes have quick access to this first stage of diabetes education. Survival Skills participants are referred to comprehensive diabetes education programs taught by Registered Nurse-Registered Dietitian teams.

For more information on Survival Skills call Lynne Dapice RN, MS, Vermont Department of Health Diabetes Control Program Coordinator at (800) 464-4343, or Sarah Narkewicz RN, MS, VT ADE President 1999 – 2000 at (802) 747-3770.

VPQHC AND IMPROVING CARE FOR PEOPLE WITH DIABETES

The VPQHC Diabetes Project which is funded by the Vermont Department of Health has three goals:

• Periodically update and improve Recommendations for the Management of Diabetes in Vermont - During 1999, VPQHC completed an update of the original 1998 version of the Recommendations for the Management of Diabetes in Vermont with the help of many practitioners from Vermont and New Hampshire. The 1999 version includes new sections addressing gestational diabetes mellitus, exercise, obesity, screening and immunizations. Substantive changes were also made to the chapters on foot exams, renal disease and lipid management.

The updated recommendations have been mailed to 1,800 practitioners and are available on the website: www.vpqhc.org. VPQHC will again update the Recommendations in 2000.

• Identify tools and strategies to assist practitioners’ efforts to optimize care of their patients with diabetes - As part of assisting practitioners’ efforts to optimize care of their patients with diabetes, VPQHC supported the work of the VT ADE in developing a Survival Skills curriculum. VPQHC has also surveyed over 1,000 clinicians who work in office practices to find out what types of educational programs and office supports they need to optimize care for their patients with diabetes.

• Develop the capacity for practitioners to evaluate their efforts to provide optimal care - The Northeast Community Laboratory Alliance (NECLA), which is an alliance among all of the hospital laboratories in Vermont, has participated in a two year pilot study with VPQHC to examine the feasibility of hospital labs pooling and reporting clinical lab information including HbA1c values on diabetes for multiple purposes, from statewide surveillance to individual patient reminders. Based on the findings of the pilot study, NECLA is exploring the development of an information system with the goal of improving disease management of diabetes in their communities.

NECLA has asked VPQHC to coordinate the input of the many groups who would like access to statewide laboratory data. This is a complex project that includes ensuring the confidentiality of clinical information and development of resources and technologies to gather information from multiple sources and report out to many users.

In addition to continuing work under these three main goals in the coming year, VPQHC’s Steering Committee for this project would like VPQHC to facilitate the coordination of the many efforts to improve care for people with diabetes in the state, especially those projects that have statewide impact. For more information contact Cyrus Jordan, MD, MPH, at VPQHC, (802) 229-2152, or e-mail Cyrus.Jordan@vpqhc.org.

The Statewide AHEC Program Focuses on Care for People with Diabetes

In 1999 the Northeastern Vermont Area Health Education Center (AHEC), in partnership with VPQHC, took the lead on a new initiative in the Northeast Kingdom to improve care for people with diabetes. Five primary care practices participated in the pilot project, which focused on integrating Recommendations for Management of Diabetes in Vermont (VPQHC, 1998), which are based on ADA recommendations, into the practices.

Another project goal was to integrate community services that would ensure that medical care, patient monitoring, support services and patient education and information resources were linked to provide a uniform and consistent system of care and support. Since then, the statewide AHEC Program, with centers based in St. Johnsbury, St. Albans, Springfield and a Program Office at University of Vermont (UVM), has made a commitment to expanding the Northeast Kingdom project throughout the state.

In collaboration with VPQHC and the Vermont Department of Health, AHEC has developed an expanded plan based upon models of chronic care management. Under this model, primary care practice sites will receive educational seminars and technical assistance similar to those provided in the pilot while adding three additional elements:

• The first element is the addition of specialty support for rural primary care practices. A diabetologist or endocrinologist would not only participate in the initial educational sessions but also provide follow up technical assistance. Specialty support, made available to perform chart reviews, collaboratively seeing patients with diabetes or even assisting in diabetes mini-clinics in primary care practices has been shown to be an effective way to support primary care providers in improving the
care of their diabetic patients.

- The second element of the expanded program will include increased access and follow-up support for primary care practices by a diabetes educator located in their community.

- Finally, in collaboration with its partners, AHEC is planning to develop a diabetes registry with a reminder system for the provider and patient with diabetes. Such a system would couple the frequency and results of HbA1c tests to recommendations set forth in Recommendations for Management of Diabetes in Vermont (VPQHC, 1999b) and report to both the provider and the patient with diabetes the recommendations for follow-up. An added feature would include a reminder to the provider and patient when extended time has lapsed between tests. Adherence to testing frequency and HbA1c levels will provide a basis for evaluating this project.

AHEC hopes to begin enrolling primary care practices in early to late winter 2000. For more information contact Mildred Reardon, MD, MACP, Associate Dean For Primary Care (802) 656-7926, or Craig Stevens, MPH, UVM AHEC Associate Director at (802) 656-2179.

DIABETES REGISTRY PILOT AT FLETCHER ALLEN HEALTH CARE

Diabetes is one of the most common chronic diseases treated in the United States. Because diabetes leads to a variety of debilitating complications it also accounts for a disproportionately high amount of health care spending. Evidence is clear that aggressive glycemic control reduces long-term complications.

In 1998, the Vermont Department of Health in cooperation with VPQHC published the initial version of the Recommendations for Management of Diabetes in Vermont. The Vermont Diabetes Registry was developed to aid health care providers in achieving these recommended standards of care.

In 1999, through grant support from the University of Vermont/Fletcher Allen Health Care (FAHC), Office of Patient Oriented Research, a pilot of a registry was carried out at two Fletcher Allen primary care sites: Aesculapius Medical Center and South Burlington Family Practice. The pilot was a collaborative among Primary Care, Endocrinology, and the Care Management Office at FAHC. The goal of the project was to translate clinical guidelines into workable office systems. The registry functions as:

- a clinical reminder system;
- a disease management system; and
- a measurement and research database used to improve the quality of patient care.

Specific objectives were:

- to improve the rates of testing of HbA1c, and screening for retinopathy and nephropathy;
- to reduce the human and financial burden of diabetes for FAHC patients; and
- to improve physician satisfaction with the time and effort spent on secondary prevention of diabetic complications.

The one year pilot began with an overview of the Vermont diabetes Recommendations. A face sheet which included demographic, visit and lab data was made available to the primary care physicians at each visit. This face sheet functioned as a reminder for recommended testing and screening.

Primary care physicians were also given the following quarterly reports:

- a list of all patients with diabetes in their panel;
- a list of all patients with HbA1c results;
- a list of patients without an HbA1c in one year;
- a list of patients who have an HbA1c over 8%; and
- a list of patients who have an HbA1c over 10%.

These reports were used by the physicians to obtain a population-based view of their panel of patients with diabetes. Improvement was seen with all measured indicators:

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre-Pilot</th>
<th>Pilot Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>At least one HbA1c</td>
<td>66.00%</td>
<td>81.38%</td>
</tr>
<tr>
<td>Average HbA1c</td>
<td>7.95%</td>
<td>7.75%</td>
</tr>
<tr>
<td>Documented ophthalmology visits</td>
<td>7.70%</td>
<td>17.01%</td>
</tr>
<tr>
<td>At least one microalbumin</td>
<td>31.80%</td>
<td>50.29%</td>
</tr>
</tbody>
</table>

Provider satisfaction surveys indicated that the registry was technically uncomplicated and useful as a reminder system.

FAHC is now planning an organization-wide expansion of the diabetes registry, with an integration of the registry into the standard information system at the institution.

For further information on the Diabetes Registry contact Charles Maclean, MD, Primary Care Internal Medicine, (802) 847-8354, or e-mail Charles.Maclean@VTMEDNET.org; Susan K. Levinsky, RN, MPH, Care Management (802) 847-4927, or e-mail Susan.Levinsky@VTMEDNET.org; or Nathaniel Clark, MD, Endocrinology-Vermont Regional Diabetes Center, (802) 847-4576, or e-mail Nathaniel.Clark@VTMEDNET.org.

COPLEY HOSPITAL'S EDUCATION AND COUNSELING PROGRAM

In 1999, two diabetes educators associated with Copley Hospital, a nurse and a dietitian, proposed to establish a diabetes program to address the educational and counseling needs of people in the region who had diabetes. Their proposal set the following goals:

- to provide education to patients with diabetes and their families;
- to increase the quality of life for these
patients;
• to decrease hospitalizations and complications related to diabetes; and
• to decrease mortality due to diabetes and its complications.

In order to follow the guidelines set forth in the Recommendations for Management of Diabetes in Vermont (VPQHC, 1999b), the Copley Hospital Education and Counseling Program includes a one-day, three-hour survival skills course, and a five-week diabetes management course. Initially, the survival skills course was offered once per month, and the management course once every six months. Demand has been such that we currently run the survival skills twice each month and the management course every three months. We are working with both our patients who are hospitalized or who are outpatients who have diabetes, to try to reach as many as possible.

We have recently begun compiling data to measure the success of our program. Body weight and HbA1c are measured at baseline, 3, 6, and 12 months. Our baseline data is taken as close to the initial education point as possible. We are monitoring re-admissions and mortalities that are diabetes related. In addition, our database includes demographic information, such as age group and geographic area, to assess program success for different groups of people. We hope to tailor program follow-up to address not only our overall success, but also to address the needs of any group of patients who may have specific or exceptional requirements.

Our team consists of our two educators, plus representatives from the hospital Outreach Program, Social Work, and Quality Management. We promote our diabetes program in the community through Outreach, through physician involvement and referral, and through home health. For more information contact Linda Shaw, RN, Program Manager (802) 888–8369, or Cheri Holton, ANP, Education Manager (802) 888–5639.

RUTLAND REGIONAL DIABETES CENTER

Rutland Regional Medical Center is a rural health care center located in central Vermont and provides services to over 62,000 residents. It is estimated that 4 - 5% of the population has diabetes, this equals approximately 3,000 individuals. The closest tertiary medical center requires travel over one and a half hours. In Rutland County, diabetes has been identified as one of the top health problems. The Rutland Regional Diabetes Center was developed in 1995 in order to provide local access specialized diabetes services.

The Rutland Regional Diabetes Center is located one block away from Rutland Regional Medical Center. Its staff includes Philip Lapp, MD endocrinologist, Donna Hunt, RD, CDE, Robin Myers, RN, CCRN, Sarah Narkewicz, RN, MS, CDE and three support staff.

Rutland Regionalal Diabetes Center has grown dramatically in its first five years. The Self-Management Program received American Diabetes Association (ADA) Recognition status in 1997. The center provides an array of diabetes related services:

• endocrine services;
• individual and group self-management education;
• gestational diabetes management education;
• pediatric diabetes clinic in association with Dr. Nathaniel Clark from FAHC;
• insulin pump management and education program;
• in-patient consultation, support, and education;
• adult support group;
• insulin pump support group;
• community screening and education updates;
• monthly services provided at Metowe Valley Family Health Center in Pawlet;
• professional education programs; and
• staff support of state initiatives including VPQHC Diabetes Steering Committee, DAWN, VTAD and ADA.

The goal of the Diabetes Center is to provide quality diabetes services that meet the needs of the community. One of the means of assessing this goal is through quality improvement data collected for ADA recognition. The 1999 Annual Review reported an increase in the number of referrals for patient services from 1998 to 1999. Specifically for group educational services, the number referred rose from 46 to 61 patients; the number enrolled also rose from 31 to 39; and in both years, the percent of patients who completed classes was around 85%.

The Diabetes Control and Complication Trial (DCCT, 1996) and the United Kingdom Prospective Diabetes Study (UKPDS, 1998) show a 35% reduction in risk of microvascular complications that lead to renal failure, blindness and amputations for each 1% reduction in HbA1c. Results from the Rutland Regional Diabetes Center show that in both years, there was an average decline in HbA1c values of about 2%.

For more information about the Rutland Regional Diabetes Center contact program staff at (802) 775-2703.

<table>
<thead>
<tr>
<th>HbA1c data</th>
<th>1998 Pre-program</th>
<th>1998 Post-program</th>
<th>1999 Pre-program</th>
<th>1999 Post-program</th>
</tr>
</thead>
<tbody>
<tr>
<td># patients with complete data</td>
<td>29</td>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average HbA1c</td>
<td>8.7</td>
<td>6.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average change in HbA1c</td>
<td>-2.0</td>
<td>-1.8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The Diabetes Education Program at Southwestern Vermont Medical Center in Bennington was established in 1993, and received recognition by the American Diabetes Association in 1998. Since inception, the number of patient visits to the diabetes nurse educator has grown from 47 annual visits to 608 visits as of last year.

The program is led by endocrinologist David M. Gorson, MD, FACE, who serves as Medical Director. Nursing education is provided by Lynn Hurley, RN, CDE and by Patricia Carpenter, RN, CDE. Dietary education is provided by Tim Marr, RD, CDE and by Lara Borders, RD. Psychosocial counseling is provided by Grace Becker, CSW.

The program established outcome measurements for patient education including program goals. The following results were obtained for 1999, based on chart review.

The same outcomes are being assessed for the year 2000. Additionally, efforts at smoking cessation will be tracked. Further information about the program may be obtained by calling Patricia Carpenter, RN, CDE, (802) 447-5315, or David Gorson, MD, (802) 442-3022.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Goal</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>HbA1c &lt; 8% or improving</td>
<td>80%</td>
<td>82%</td>
</tr>
<tr>
<td>Annual dilated eye exams</td>
<td>100%</td>
<td>86%</td>
</tr>
<tr>
<td>BP at goal (130/85) or improving</td>
<td>90%</td>
<td>82%</td>
</tr>
<tr>
<td>Patients self monitor their blood glucose</td>
<td>90%</td>
<td>99%</td>
</tr>
<tr>
<td>Patients' blood glucose results stable or improving</td>
<td>90%</td>
<td>79%</td>
</tr>
<tr>
<td>Patients maintain weight (if ideal) or work toward goal weight</td>
<td>90%</td>
<td>86%</td>
</tr>
</tbody>
</table>
Additional Frequent Hospitalizations and Surgeries

The majority of the frequent causes for hospitalization have been addressed in previous sections. Some additional conditions that are frequent causes of hospitalization or frequent surgeries or consume significant amounts of our health care resources are presented on the maps to follow. The majority of these apply to older Vermonters. This age group uses a disproportionately higher share of hospital services than younger Vermonters.

Additional High Volume Procedures

<table>
<thead>
<tr>
<th>Quality and Utilization Measures</th>
<th>1998 VT Rate</th>
<th>1997 US Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Back and neck surgery (laminectomy) -admissions per 1,000 people (ages 65+) (map)</td>
<td>1.3</td>
<td>1.8</td>
</tr>
<tr>
<td>Hysterectomy -admissions per 1,000 (women ages 15+) (map)</td>
<td>4.6</td>
<td>5.5</td>
</tr>
</tbody>
</table>

Additional High Volume Hospitalizations for the Elderly

<table>
<thead>
<tr>
<th>Quality and Utilization Measures</th>
<th>HP2000</th>
<th>1998 VT Rate</th>
<th>1997 US Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hip, knee and ankle replacement -admissions per 1,000 people (ages 65+) (map)</td>
<td>12.0</td>
<td>12.2</td>
<td></td>
</tr>
<tr>
<td>Total adult respiratory diseases -admissions per 1,000 (ages 65+) (map)</td>
<td>27.1</td>
<td>26.0</td>
<td></td>
</tr>
<tr>
<td>Major surgery on the large intestines -admissions per 1,000 (ages 65+) (map)</td>
<td>4.3</td>
<td>3.9</td>
<td></td>
</tr>
<tr>
<td>Older adults receiving flu shots in the past year (ages 65+)</td>
<td>60%</td>
<td>70%</td>
<td>66%</td>
</tr>
</tbody>
</table>

*See Appendix for details including rates in prior years and definitions of each measure.

Some Observations on Additional Hospitalizations and Surgeries

(see Appendix for detailed data)

Back and neck surgery. From 1994 to 1998 there has been a slight decline in back and neck surgery both in Vermont and nationally. Both rates are very similar. There is one region in Vermont which has consistently higher rates of back and neck surgery than the state average, but surgeries in this region appear to be declining at a similar rate to the decline statewide.

Hysterectomy. Both in Vermont and nationally, there has been a very slight increase in the hysterectomy rate from 1994 to 1998. The Vermont rate is a little below the national average. Two regions which had historically deviated from the state average, one above and one below, showed rates which were not significantly different from the state rate in 1998.

Hip, knee and ankle replacement surgery. Across time, across regions of the state, and compared to national rates, there is no variation in the rate of surgery.

Adult respiratory disease. The rate of respiratory diseases has risen slightly both in Vermont and nationally, and the rates are very similar. Variation between regions of the state are substantial. The rate of hospitalization for people 65 years and older averaged 27 per 1,000 elderly adults, but was as low as 16 per 1,000 in one community and as high as 54 per 1,000 in another region.

Major surgery on the large intestines. Across time and regions within Vermont there has been no variation in hospitalizations. The state rate has been slightly above the national average, but the national average has been increasing and is approaching the state average.
PULMONARY REHABILITATION PROGRAM AT BRATTLEBORO MEMORIAL HOSPITAL

An estimated 4,800 residents of Windham County are living with chronic lung disease. Each year, some 300 of these people require treatment at Brattleboro Memorial Hospital (BMH), many for multiple exacerbations of their chronic disease. Their average length hospital stay in BMH is 5.9 days. To address this need, an interdisciplinary quality improvement team developed an outpatient Pulmonary Rehabilitation Program.

The first class began in October 1997. Prior to the inception of this project no Pulmonary Rehabilitation program was available in Windham or Windsor Counties. This program has the potential to improve the quality of life of every individual who participates. The strength of this potential is demonstrated in the following examination of the outcomes thus far.

Sixty-nine patients have participated from October 1997 to March 2000. Functional, physiologic and subjective data have been collected on all people before program entry and upon completion. Measures were taken of a 6-minute walk, stair climbing, and treadmill exercise tolerance as well as SpO2 (a non-invasive measurement of blood oxygen levels) during various activities. In addition, scores on the Pulmonary Rehabilitation Health Knowledge Test, the Pulmonary Functional Status & Dyspnea Questionnaire modified version, and the Hare/Davis Cardiac Depression Scale have been recorded.

There has been a 35% average increase in the distance achieved in the 6-minute walk test. At the same time, the ratings of perceived dyspnea (RPD, an evaluation of how short of breath a person feels) were decreased following rehabilitation. The average resting SpO2 did not significantly change; however, four patients who required supplemental oxygen at entry were able to perform the post-program test without supplemental oxygen.

Five patients were prescribed oxygen as a result of documented desaturations and hypoxia (drop in blood oxygen levels) with exercise. On the average, it took 22% less time to ascend/descend one flight of stairs. Health knowledge test scores improved 36%, averaging 63% correct before the program and 86% correct after the program. The amount of work in METS (a measurement of the amount of energy that is needed to complete a task) increased 92% by the end of the program.

The 6-minute walk test is both an objective test and a functional assessment tool. The patients are required to walk a course at their own pace without any cues from the therapist on proper breathing techniques or walking pattern. We believe several factors led to these results including increased overall conditioning, education in proper breathing techniques, energy conservation, and improvement in mood.

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The overall score from the Hare/Davis Cardiac Depression Scale showed statistically significant improvement in mood. In six of eight sub-scales, there was statistically significant improvement. These were: anhedonia (apathy), mood, cognition, inactivity, disturbances and perceptions. In sleep disturbance and hopelessness, there were no statistically significant changes in scores.

The Pulmonary Functional Status and Dyspnea Questionnaire modified version also showed statistically significant improvement in total dyspnea and activity scores and statistically non-significant improvement in fatigue scores.

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Pulmonary Function testing was done before the program only, therefore, a comparison of possible increased lung capacity could not be done. Pulmonary Rehabilitation is becoming the standard plan of care for treatment of chronic obstructive pulmonary disease (COPD). It is imperative to gather both quantitative and qualitative data from the patients both before and after the program for continuing analysis of the effectiveness of rehabilitation. Our outcome measures allow the monitoring of both the physiological and psychological changes exhibited by the patients in the rehabilitation program.

Pulmonary Function testing will be included in the post rehabilitation tests to analyze improvement in lung capacity and response to proper medication use. Increased physician referrals indicated the need for a second class to decrease waiting time. This was added to the program and although there is still a waiting list, the wait time has decreased 50%, to 4 – 6 weeks.

Graduates are encouraged to join the monthly support group and the maintenance exercise group that meets every two weeks. We also continue to assure the quality of the program by utilizing satisfaction surveys at graduation, monthly phone contact and quarterly questionnaires to track continued progress. For more information contact Mary Anne Riley, RRT, Coordinator Pulmonary Rehabilitation, (802) 257-8897, Burton Teper, MD, Medical Director, (802) 257-0505 or Robert F. St. Pierre, BS, RRT, RCPT, Director Respiratory Care, (802)-257-8318.
Back and Neck Surgery

1998 age-adjusted rate of hospitalization per thousand residents ages 20-64‡

Surgery is one form of treatment for back pain caused by compression of the spinal cord or herniated vertebral discs.

1998 State Average
Total Discharges = 473
Rate = 1.3 per 1,000
Average Length of Hospitalization = 2.5 Days

Rates on this map represent the number of hospitalizations per thousand Vermont residents who live in a geographic region of the state. The geographic area is called the hospital service area (HSA). These rates do not reflect where care is actually delivered.

Statistical significance, measured at the .05 level, is highlighted in either red (above the state average) or blue (below the average). In these areas, the regional rate is significantly different from the overall statewide rate. All of the HSA rates are age-adjusted to account for the different population mixes in different regions of the state.

‡ U.S. rate is for people ages 15-64 who were hospitalized.
Hysterectomy

1998 age-adjusted rate of hospitalization per thousand women age 15 and older

A hysterectomy is the surgical removal of a woman’s uterus. It is one form of treatment for common gynecological conditions such as fibroids, uterine prolapse, abnormal bleeding, pelvic pain and endometriosis.

Rates on this map represent the number of hospitalizations per thousand Vermont residents who live in a geographic region of the state. The geographic area is called the hospital service area (HSA). These rates do not reflect where care is actually delivered.

Statistical significance, measured at the .05 level, is highlighted in either red (above the state average) or blue (below the average). In these areas, the regional rate is significantly different from the overall statewide rate. All of the HSA rates are age-adjusted to account for the different population mixes in different regions of the state.
Hip, Knee and Ankle Replacement Surgery

1998 age-adjusted rate of hospitalization per thousand residents age 65 and older

A total replacement is a surgical procedure to replace a damaged hip, knee or ankle joint with an artificial joint. The most common condition for which such replacements are performed is degenerative arthritis.

Rates on this map represent the number of hospitalizations per thousand Vermont residents who live in a geographic region of the state. The geographic area is called the hospital service area (HSA). These rates do not reflect where care is actually delivered.

Statistical significance, measured at the .05 level, is highlighted in either red (above the state average) or blue (below the average). In these areas, the regional rate is significantly different from the overall statewide rate. All of the HSA rates are age-adjusted to account for the different population mixes in different regions of the state.
Adult Respiratory Diseases
1998 age-adjusted rate of hospitalization per thousand residents age 65 and older

The most common respiratory conditions resulting in hospitalizations for older adults are pneumonia and chronic obstructive pulmonary disease (COPD).

1998 State Average
Total Discharges = 1,969
Rate = 27.1 per 1,000
Average Length of Hospitalization = 5.5 Days

Rates on this map represent the number of hospitalizations per thousand Vermont residents who live in a geographic region of the state. The geographic area is called the hospital service area (HSA). These rates do not reflect where care is actually delivered.

Statistical significance, measured at the .05 level, is highlighted in either red (above the state average) or blue (below the average). In these areas, the regional rate is significantly different from the overall statewide rate. All of the HSA rates are age-adjusted to account for the different population mixes in different regions of the state.
Major Surgery on the Large Intestines
1998 age-adjusted rate of hospitalization per thousand residents age 65 and older

The most common diagnosis for older adults having major surgery on the large intestines is cancer.

Rates on this map represent the number of hospitalizations per thousand Vermont residents who live in a geographic region of the state. The geographic area is called the hospital service area (HSA). These rates do not reflect where care is actually delivered.

Statistical significance, measured at the .05 level, is highlighted in either red (above the state average) or blue (below the average). In these areas, the regional rate is significantly different from the overall statewide rate. All of the HSA rates are age-adjusted to account for the different population mixes in different regions of the state.
Care at the End of Life

Vermont has a long tradition of caring for the dying both at home and in the hospital. However, the power of modern medicine often transforms the dying process into one of high technology intervention and vigorous treatment. The result can lead to bewildered and overwhelmed patients and families and costly, aggressive, life-prolonging procedures. Many health care practitioners have not received formal training about the medical aspects of end of life care, nor have they received training about communication with families in these difficult situations.

Hospices developed in Vermont in the early 1980s to provide quality care and help people live well until death. Initially, five area non-profit home health agencies provided hospice services to both patients and families by interdisciplinary teams of nurses, physicians, aides, volunteers, bereavement and social workers. Over time the services have grown. Currently, every citizen of Vermont has access to a comprehensive hospice program through the eleven home health agency-based hospice programs and three volunteer hospices, each serving an area of Vermont with Medicare certified hospice care. All these organizations are members of the Hospice Council of Vermont.

Medicare and other insurer reimbursements are often not adequate to cover the costs of all hospice services, reimbursing care on a flat rate per day. For example, reimbursement has not been designed to cover the cost of the growing use of radiation and chemotherapy for palliation, which is the medical term for control of pain and symptoms, in contrast to efforts aimed at cure.

New chemotherapy protocols and other therapies offer patients with cancer hope and a chance of a longer life, though they may have significant side effects that reduce their quality of life. However, in order to receive hospice services, Medicare requires a strict “six months or less to live” prognosis. If patients, their families, or their physicians are unwilling to commit to this restriction, hospice services will not be covered by insurance. This can result in people dying while undergoing aggressive treatments but without hospice care and palliative medicine to ensure their comfort.

The population of patients in hospice care is growing, as indicated on the accompanying table. There are also indications, where data is available, that the population receiving hospice care is changing. In 1996, 95% of Vermont hospice patients statewide had cancer. In 1999, the home health agency serving the central Vermont region reported that only 60% of their patients had cancer. The other 40% were diagnosed with either chronic lung disease, heart disease or Alzheimer’s disease.

<table>
<thead>
<tr>
<th>Cancer Deaths and Hospice/Palliative Patients in Vermont 1990-1998</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancer deaths - age-adjusted rate per 100,000 Vermonters*</td>
</tr>
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<td><strong>617</strong></td>
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</table>

*Cancer deaths for Vermonters based on data from the Vermont Department of Health, 2000b. The rate of cancer deaths in Vermont is age-adjusted per 100,000 Vermonters to the 1970 U.S. standard population. This allows the comparison of rates among populations having different age distributions by standardizing the age-specific rates in each population to one standard population.

**Hospice and palliative patients in Vermont based on data from the Hospice Council of Vermont, 2000.
In 1998, the leading causes of death for Vermonters were: heart disease (29%) and stroke (7%), cancer (25%), and respiratory diseases (chronic lung disease, 5%; influenza and pneumonia, 5%). Together these accounted for seven out of every ten deaths. The total number of Vermonters who died in 1998 was 4,933. Ninety-one percent (4,486) of Vermonters died in-state. All together, counting both Vermonters and out-of-state residents, 4,990 people died in Vermont in 1998.

A 1996 National Gallup Poll reported that 90% of Americans said they would prefer to die at home if they were terminally ill (six months or less to live). The place where people die is changing as indicated on the accompanying graph. While the proportion of Vermonters dying at home has remained relatively constant across the 1990s (one in five people), the proportion dying in hospitals has declined to below half of all deaths, and the proportion dying in nursing homes has risen to about a quarter. Certified hospice services are available in some nursing homes.
**Spotlights on Improvement**

**Vermont Respite House**

Vermont Respite House (VRH) in Williston, Vermont was founded in 1991 as a home-away-from-home for terminally ill individuals—a place where they can live their final days in peace, surrounded by the love of family and friends. VRH is dedicated to providing a warm, caring, personalized home for people in the final stages of life. VRH is committed to the hospice philosophy of helping people live a quality life until death by respecting and supporting the uniqueness of each person.

Vermont Respite House itself is a unique model in health care today. Not a hospital, nursing home or institution, it is truly a home for residents and their families. Resident autonomy and comfort are the basis for all decision-making, and life is lived to the fullest every day. Residents come to the House for a variety of reasons: perhaps they do not have a full time care provider or their family lives out of state. A well-qualified staff of nurse case managers, house managers and trained volunteers provide a variety of services to complement the medical care each resident receives.

The House is managed by the Visiting Nurse Association (VNA) of Chittenden and Grand Isle Counties; hospice service is provided by the VNAs Hospice of the Champlain Valley. Services are provided regardless of age, race, gender, sexual orientation, religion or diagnosis. There are 14 beds at VRH, which receives generous support from the community and has its own volunteer corps. For more information contact Mary Lou Morrissette, Director, Vermont Respite House, (802) 879-0943.

**The Vermont Ethics Network**

The Vermont Ethics Network is a statewide, non-profit organization of health care providers and interested community members, which has focused on ethical issues of care at the end of life such as the viability of Living Wills and the creation of a Durable Power of Attorney to designate decision-making and organ donation.

In 1996, the Vermont Ethics Network created a series of 42 group discussions around the state, asking community members to reflect on their experiences with dying and what they wanted care to be at the end of life. Four hundred individuals contributed to a report entitled *Vermont Voices on the Care of the Dying*. The report detailed the problems of families and patients who are reluctant to discuss their feelings and needs, problems with advance directives (which are advanced instructions about future medical care, usually near the end of life), and lost opportunities to live one’s life to the fullest at the end.

It also described clinicians’ inability to talk openly about dying and death, instead focusing on diagnostic tests and ongoing treatment. Failure of communication between primary care physicians and specialists, lack of physician knowledge of pain and symptom control and palliative medicine, and reluctance to use hospice services were all cited repeatedly as major obstacles to good care for the dying.

This report is serving as a blueprint for organizing educational forums for clinicians and the public across the state. For more information contact John Campbell, Vermont Ethics Network, (802) 828-2909.

**VT ExCEL – A Coalition Working to Improve End of Life Care**

In the last fifteen years, several different groups have grown and dedicated themselves to improving care for Vermonters at the end of their lives. These groups include: Hospices and Home Health Agencies which emphasize care at home; the Vermont Ethics Network which focuses on medical ethical issues and advanced care planning; and the Vermont Palliative Care Initiative, which represents the Vermont Medical Society and physicians’ efforts to learn the best medical and ethical responses to the dying. Together, these groups and their colleagues in government and hospitals have recently formed a coalition called Vermont Excellence in Care at the End of Life or VT ExCEL.

One goal of VT ExCEL is to educate physicians and clinicians about state-of-the-art symptom control and encourage physicians and nurses to become Board Certified in Hospice and Palliative Medicine. Currently, six physicians and 36 nurses are Board Certified in Vermont. Other goals include: incorporating a mission statement in every hospital expressing commitment to excellence in end of life care; incorporating assessment of pain as a “fifth vital sign” in every hospital flow sheet; and developing specific protocols or “guideline orders” for management of common symptoms. VT ExCEL would also like to assess the quality of care which people receive as they die in Vermont.
Spotlights on Improvement

In 1999 the Hospice Council of Vermont, in conjunction with the Vermont Ethics Network and the Vermont Medical Society, organized their first joint conference entitled, "Hospice Care meets Palliative Medicine—Barriers and Strategies." This conference brought together more than 240 nurses, physicians, counselors and volunteers to discuss best practices, new advances in pain and symptom control management, and ethical and quality of life issues. The coalition of these groups, VT ExCEL, plans to sponsor two educational forums every year. For more information e-mail info@vtmd.org.

Palliative Care Program at Fletcher Allen Health Care

In an effort to improve the lives of hospitalized patients with life-threatening illness, Fletcher Allen Health Care (FAHC) launched its Palliative Care Program in September 1998. The Program's staff includes a full-time Palliative Care Nurse Specialist, Barbara Segal, RN, MS, and part-time Medical Director, Zail Berry, MD, MPH, who provide consultation services throughout the hospital.

The Program cared for 500 patients in the first 16 months of operation by assessing treatment options so that decisions reflect the patient’s wishes and values, advising medical teams on optimal pain management, and assisting with discharge planning and implementation.

Plans for the future include expansion of nursing and counseling personnel, development of pain and symptom protocols to assist hospital personnel, and possibly a dedicated Palliative Care Unit. For more information contact Barbara Segal, RN, MS, or Zail Berry, MD, MPH, (802) 656-5156.

M.T. Ascutney’s Palliative Care Project

M.T. Ascutney Hospital and Health Center entered into a cooperative Quality Improvement Palliative Care Project with Dartmouth-Hitchcock Medical Center and the Veterans Administration Medical Center in White River Junction, Vermont in 1995. As a result of that study, a continuous quality improvement project was formulated and the Palliative Care Map was adopted for use throughout the facility.

In 1997, a Palliative Care Task Force formed to build a comprehensive program throughout the facility. Quality of care is monitored by retrospective chart review and debriefings with staff, as well as a telephone interview with family members. Palliative Care Task Force members are involved in a retrospective continuous quality improvement project regarding the honoring of advance directives. The program’s community outreach includes an annual Service of Remembrance and an educational series.

Plans for the future include continued work with the Vermont Ethics Network regarding advance directives and continued community outreach. For more information, contact Dr. Judy Hills, (802) 674-7300, or Betsy Burghardt, (802) 674-7144.

Palliative and End of Life Care in Nursing Homes

In March 2000, the Vermont Department of Aging and Disabilities issued a request for proposals to improve and enhance palliative and end of life care received by nursing home residents. Currently, about a quarter of all Vermont deaths occur in nursing homes. The Palliative and End of Life Care grant project is part of the Department’s Nursing Home Quality Initiatives program which funds various initiatives aimed at improving and rewarding quality in Vermont's nursing homes.

This grant project will provide $60,000 to fund 2-3 nursing home quality improvement projects for a one-year period. The nursing home grantees will utilize an interdisciplinary approach in working with the local hospice program, physicians, and hospital. Nursing home residents and their family members will be involved in both the planning and implementation of these projects. The Department hopes this grant project proves successful and can be replicated statewide so that eventually all nursing home residents can benefit from state-of-the-art palliative and end of life care. For more information contact Mary Trahant, (802) 241-2401.
Appendix
# Hospitalizations

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<td>Maternity admissions per 1,000 (women ages 10-49)</td>
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*Admissions per 1,000 are calculated by dividing the total number of occurrences of the event/condition (numerator) by the total number of people in the population (denominator) and multiplying by 1,000. Average length of stay is calculated by dividing the total number of days people were hospitalized by the total number of hospital stays for that condition.

**New definitions in 1998 have added several surgical DRGs. Rates for prior years have not been recalculated.
### Hospitalizations (continued)

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<thead>
<tr>
<th>Definition of the Measures</th>
<th>1998 VT Numerator</th>
<th>1998 VT Denominator</th>
<th>VT Data Source</th>
<th>US Data Source</th>
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<tr>
<td>Medical, surgical and maternity DRGs 1-384, 392-423 and 439-494. For 1998, DRGs 495-503 have been added. These admissions do NOT include newborns or stays for mental health and chemical dependency.</td>
<td></td>
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<td>VHDDS</td>
<td>HCUP</td>
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<td></td>
<td>49,272</td>
<td>590,883</td>
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<td>27,648</td>
<td>518,310</td>
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<tr>
<td></td>
<td>21,624</td>
<td>72,573</td>
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</table>

| Total acute care days divided by total acute care admissions. | 226,253 | 49,272 |
|                                                               | 104,625 | 27,648 |
|                                                               | 121,628 | 21,624 |

|                                                                                          | 12,058            | 518,310              |                |                |
|                                                                                          | 15,308            | 72,573               |                |                |

| Total medical days divided by total medical admissions. | 125,155 | 27,366 |
|                                                       | 47,403  | 12,058 |
|                                                       | 77,752  | 15,308 |

|                                                                                          | 8,739  | 518,310 |
|                                                                                          | 6,294  | 72,573  |

| Total surgical days divided by total surgical admissions. | 85,218  | 15,033  |
|                                                         | 41,480  | 8,739   |
|                                                         | 43,738  | 6,294   |

| Vaginal births, C-sections and other maternity-related hospitalizations DRGs 370-384 for women 10-49 years old. | 6,827  | 178,473 |
|                                                                                                           | VHDDS  | HCUP    |
## Ambulatory or Outpatient Services and Supplies

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<td>Drug prescriptions (and refills) per person</td>
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*Visits per person are calculated by dividing the total number of occurrences of the event/condition (numerator) by the total number of people in the population (denominator). Visits or surgeries per 1,000 people are calculated by dividing the total number of occurrences of the event/condition (numerator) by the total number of people in the population (denominator) and multiplying by 1,000.

**US and New England managed care organizations.

## Functional Status

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<td>Percent of people with good to excellent health status (ages 18+)</td>
<td>90%</td>
<td>89%</td>
<td>90%</td>
<td>89%</td>
<td>90%</td>
<td>87%</td>
<td>87%</td>
<td>87%</td>
</tr>
<tr>
<td>Health status of seniors (ages 65+)</td>
<td>Vermont data is not currently available.</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

*Percents are calculated by dividing the total number of occurrences of the event/condition (numerator) by the total number of people in the population (denominator) and multiplying by 100.
Ambulatory or Outpatient Services and Supplies (continued)

<table>
<thead>
<tr>
<th>Definition of the Measures</th>
<th>1998 VT Numerator</th>
<th>1998 VT Denominator</th>
<th>VT Data Source</th>
<th>MCO Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home and office visits, excluding mental health and chemical dependency visits. (1997 rates are only for Vermonters enrolled in managed care plans; 1995, 1996, and 1998 rates include people insured by managed care and fee-for-service health plans.) Based on the experience of 312,128 Vermonters, ages 0-64, or 60% of the population in this age group. 1997-98 Medicare data were not available in Vermont at the time of publication.</td>
<td>1,144,769</td>
<td>312,128</td>
<td>BC ffs, BC VHP, BCmcaid, TVHP, Medicaid ffs, MVP, KPcomm, KPmcaid</td>
<td>QC96</td>
</tr>
<tr>
<td>Emergency visits based on hospital revenue codes 450-459. (1997 rates are only for Vermonters enrolled in managed care plans; 1995, 1996, and 1998 rates include people insured by managed care and fee-for-service health plans.) Based on the experience of 312,128 Vermonters, ages 0-64, or 60% of the population in this age group. 1997-98 Medicare data were not available in Vermont at the time of publication.</td>
<td>61,234</td>
<td>312,128</td>
<td>BC ffs, BC VHP, BCmcaid, TVHP, Medicaid ffs, MVP, KPcomm, KPmcaid</td>
<td>QC96</td>
</tr>
<tr>
<td>Outpatient surgical procedures at a hospital or independent surgical center, based on Physicians’ CPT-4 codes. (1997 rates are only for Vermonters enrolled in managed care plans; 1995, 1996, and 1998 rates include people insured by managed care and fee-for-service health plans.) Based on the experience of 271,769 Vermonters, ages 0-64, or 52% of the population in this age group. 1997-98 Medicare data were not available in Vermont at the time of publication.</td>
<td>22,173</td>
<td>271,769</td>
<td>BC ffs, BC VHP, BCmcaid, TVHP, Medicaid ffs, MVP, KPcomm, KPmcaid</td>
<td>QC96</td>
</tr>
<tr>
<td>General volume indicator of prescription drug use, based on Vermonters with insurance coverage. 1998 data does not include elderly Vermonters. Based on the experience of 255,916 Vermonters, ages 0-64, or 49% of the population in this age group.</td>
<td>1,433,278</td>
<td>255,916</td>
<td>BC ffs, BC VHP, BCmcaid, TVHP, Medicaid ffs, MVP, KPcomm, KPmcaid</td>
<td></td>
</tr>
</tbody>
</table>

Functional Status (continued)

<table>
<thead>
<tr>
<th>Definition of the Measures</th>
<th>1998 VT Numerator</th>
<th>1998 VT Denominator</th>
<th>VT Data Source</th>
<th>US Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults who reported that their general health was “good”, “very good” or “excellent.” The rate excludes those who responded do not know. Based on a phone survey of a sample of Vermonters 18 years and older. The U.S. rate is the median rate among the states.</td>
<td>est. 404,582</td>
<td>449,536</td>
<td>NCCD99</td>
<td>NCCD99</td>
</tr>
<tr>
<td>Self-report based on a sample of elderly Vermonters indicating whether their physical and mental health improved, stayed the same, or worsened over a two year period.</td>
<td></td>
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</tbody>
</table>
### Access to Care

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Percent of children who have seen a medical professional in an office, clinic or at home ages 1-11</td>
<td>89%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of adults who have seen a medical professional in an office, clinic, nursing home or at home in the past three years.</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>(ages 20-44)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ages 20-44</td>
<td>89%</td>
<td>92%</td>
<td>89%</td>
<td></td>
<td>88%</td>
<td>93%</td>
</tr>
<tr>
<td>(ages 45-64)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ages 45-64</td>
<td>84.8%</td>
<td>93%</td>
<td>92%</td>
<td></td>
<td>89%</td>
<td>94%</td>
</tr>
<tr>
<td>ages 65+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>86%</td>
<td>80%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Percentages are calculated by dividing the total number of occurrences of the event/condition (numerator) by the total number of people in the population (denominator) and multiplying by 100.
**US and New England managed care organizations.

### Satisfaction with the Experience of Care

<table>
<thead>
<tr>
<th>Quality and Utilization Measures*</th>
<th>1999 VT</th>
<th>1998 VT</th>
<th>1998** VT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfaction with health care by members of managed care plans</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>overall satisfaction with health care services</td>
<td>75%</td>
<td>70%</td>
<td>75%</td>
</tr>
<tr>
<td>satisfaction with personal doctor or nurse</td>
<td>73%</td>
<td>72%</td>
<td></td>
</tr>
<tr>
<td>getting needed health care as a member of a managed care plan</td>
<td>82%</td>
<td>74%</td>
<td></td>
</tr>
</tbody>
</table>

*Percentages are calculated by dividing the total number of occurrences of the event/condition (numerator) by the total number of people in the population (denominator) and multiplying by 100.
**US and New England managed care organizations.
### Access to Care (continued)

<table>
<thead>
<tr>
<th>Definition of the Measures</th>
<th>1998 VT Numerator</th>
<th>1998 VT Denominator</th>
<th>VT Data Source</th>
<th>MCO Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children ages 1-11 years who have had at least one home or office visit with a medical professional in one or two years, excluding mental health and chemical dependency outpatient visits. Based on data from 42% of Vermont children between the ages of one and 11 years old.</td>
<td>31,373</td>
<td>35,058</td>
<td>BC ffs, BC VHP, BCmcaid, TVHP, MVP, KPcomm, KPmcaid</td>
<td>QC96</td>
</tr>
<tr>
<td>Adults who have had at least one home or office visit with a medical professional in the last three years, excluding mental health and chemical dependency outpatient visits.</td>
<td>49,279</td>
<td>55,448</td>
<td>BC ffs, BC VHP, BCmcaid, MVP, KPcomm, KPmcaid</td>
<td>QC96</td>
</tr>
<tr>
<td>Based on data from 25% of Vermont adults between the ages of 20 and 44 years old.</td>
<td>46,638</td>
<td>50,681</td>
<td>BC ffs, BC VHP, BCmcaid, MVP, KPcomm, KPmcaid</td>
<td>QC96</td>
</tr>
<tr>
<td>1995 Vermont data are percent with visits in the last two years; 1996 Vermont data are visits in the last year; 1997-98 Medicare data were not available in Vermont prior to publication.</td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

### Satisfaction with the Experience of Care (continued)

<table>
<thead>
<tr>
<th>Definition of the Measures</th>
<th>VT Data Source</th>
<th>MCO Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey of a sample of 108,837 Vermonters who are 18 years or older or about 24% of the total population of Vermonters in this age group, indicating how well health care services meet their expectations across a wide range of experiences and different provider settings (e.g., hospital stays, hospital outpatient services such as the emergency room, or physician office visits). People surveyed were in 6 commercial or Medicaid managed care plans in Vermont. The average rate is the simple average of the responses of those surveyed in the six plans.</td>
<td>HCA99</td>
<td>QC99</td>
</tr>
<tr>
<td>People who indicated they were very satisfied (reporting an 8, 9, or 10 on a 10 point scale) with all of the health care from all doctors and other health care providers.</td>
<td>HCA99</td>
<td>QC99</td>
</tr>
<tr>
<td>People who indicated that they were very satisfied (reporting an 8, 9, or 10 on a 10 point scale) with their personal doctor or nurse.</td>
<td>HCA99</td>
<td>QC99</td>
</tr>
<tr>
<td>People who indicated they did not have a problem getting a personal doctor or nurse they are happy with, getting a referral to a specialist when needed, getting needed care and not having a delay in getting care waiting for approval from their health plan.</td>
<td>HCA99</td>
<td>QC99</td>
</tr>
</tbody>
</table>
# Maternal and Infant Health Care

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Percent of women receiving prenatal care in the first trimester (first three months of pregnancy)</td>
<td>90%</td>
<td>86.1%</td>
<td>87.4%</td>
<td>87.5%</td>
<td>87.9%</td>
<td>87.3%</td>
<td>81.9%</td>
<td>82.5%</td>
<td>83.0%</td>
<td></td>
</tr>
<tr>
<td>Percent of Cesarean section (C-section) deliveries</td>
<td>15%</td>
<td>17.7%</td>
<td>17.2%</td>
<td>17.1%</td>
<td>16.5%</td>
<td>17.3%</td>
<td>20.8%</td>
<td>20.6%</td>
<td>20.8%</td>
<td>21.2%</td>
</tr>
<tr>
<td>Percent of vaginal deliveries for women with a prior C-section (vaginal birth after C-section or VBAC)</td>
<td>35%</td>
<td>39.4%</td>
<td>45.4%</td>
<td>40.6%</td>
<td>39.7%</td>
<td>39.1%</td>
<td>27.5%</td>
<td>28.3%</td>
<td>27.4%</td>
<td>26.3%</td>
</tr>
<tr>
<td>Average length of stay for hospital deliveries (women 10-49)</td>
<td>2.0</td>
<td>2.1</td>
<td>2.1</td>
<td>2.2</td>
<td>2.1</td>
<td>2.2</td>
<td>2.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of low birth weight babies (less than 2500 grams)</td>
<td>5%</td>
<td>6.1%</td>
<td>5.4%</td>
<td>6.2%</td>
<td>6.3%</td>
<td>6.6%</td>
<td>7.3%</td>
<td>7.4%</td>
<td>7.5%</td>
<td>7.6%</td>
</tr>
<tr>
<td>Percent of very low birth weight babies (less than 1500 grams)</td>
<td>1%</td>
<td>1.0%</td>
<td>0.8%</td>
<td>1.0%</td>
<td>1.0%</td>
<td>1.4%</td>
<td>1.4%</td>
<td>1.4%</td>
<td>1.4%</td>
<td>1.4%</td>
</tr>
<tr>
<td>Frequency of ongoing prenatal care</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Maternal check-ups after delivery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

*Percentages are calculated by dividing the total number of occurrences of the event/condition (numerator) by the total number of people in the population (denominator) and multiplying by 100. Average length of stay is calculated by dividing the total number of days people were hospitalized by the total number of hospital stays for that condition(s).
### Maternal and Infant Health Care (continued)

<table>
<thead>
<tr>
<th>Definition of the Measures</th>
<th>1998 VT Numerator</th>
<th>1998 VT Denominator</th>
<th>VT Data Source</th>
<th>US Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vermont residents receiving prenatal care in the first 13 weeks of pregnancy, divided by the total number of babies born to residents (excluding 259 babies for whom the information was not known, or 259 + 6310 = 6569 resident babies).</td>
<td>5510</td>
<td>6310</td>
<td>VVitStat</td>
<td>HP2010</td>
</tr>
<tr>
<td>Deliveries by cesarean section at Vermont hospitals, divided by the total number of deliveries at these hospitals (6166 total deliveries at Vermont hospital).</td>
<td>1057</td>
<td>6116</td>
<td>VVitStat</td>
<td>USNat</td>
</tr>
<tr>
<td>Vaginal deliveries (at Vermont hospitals) by women who had a C-section in a prior delivery, divided by all women who had a prior C-section.</td>
<td>210</td>
<td>537</td>
<td>VVitStat</td>
<td>USNat</td>
</tr>
<tr>
<td>Average length of hospital stay for Vermont residents (women 10-49) delivering vaginally and by C-section. Total days divided by total admissions. The VHDDS reported 6277 deliveries by Vermont residents in 1998.</td>
<td>13975</td>
<td>6277</td>
<td>VHDDS</td>
<td>HCUP</td>
</tr>
<tr>
<td>Newborns (born to Vermont residents) weighing less than 2,500 grams at birth divided by the total number of newborns (excluding 7 deliveries where weight was unknown, 7 + 6562 = 6569).</td>
<td>433</td>
<td>6562</td>
<td>VVitStat</td>
<td>HP2010</td>
</tr>
<tr>
<td>Newborns (born to Vermont residents) weighing less than 1,500 grams at birth divided by the total number of newborns (see above).</td>
<td>94</td>
<td>6562</td>
<td>VVitStat</td>
<td>HP2010</td>
</tr>
<tr>
<td>The amount of prenatal visits compared to the expected number of visits women should receive.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Women who had a postpartum visit 3 to 8 weeks after delivery.</td>
<td></td>
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</tbody>
</table>
## Childhood and Adolescent Health Care

### Quality and Utilization Measures*

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Children with complete immunization by age two - 4:3:1</td>
<td>90%</td>
<td>84%</td>
<td>85%</td>
<td>86%</td>
<td>87%</td>
<td>74%</td>
<td>76%</td>
<td>78%</td>
<td>78%</td>
<td>81%</td>
</tr>
<tr>
<td>Children with complete immunization by age two - 4:3:1:3</td>
<td>84%</td>
<td>86%</td>
<td></td>
<td></td>
<td></td>
<td>69%</td>
<td>74%</td>
<td>77%</td>
<td>76%</td>
<td>79%</td>
</tr>
<tr>
<td>Adolescent immunization (two doses of measles vaccine by 7th grade)</td>
<td>96%</td>
<td>97%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total pediatric respiratory infections and asthma - admissions per 1,000 children (ages 0-17) (map)</td>
<td>1994 VT</td>
<td>1997 US</td>
<td></td>
<td></td>
<td></td>
<td>5.0</td>
<td>4.3</td>
<td>3.7</td>
<td>3.1</td>
<td>3.1</td>
</tr>
<tr>
<td>simple pneumonia</td>
<td>1.6</td>
<td>1.3</td>
<td>1.2</td>
<td>0.9</td>
<td>0.9</td>
<td>2.9</td>
<td>3.2</td>
<td>2.5</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>bronchitis and asthma</td>
<td>3.2</td>
<td>2.7</td>
<td>2.3</td>
<td>2.1</td>
<td>1.9</td>
<td>4.5</td>
<td>4.8</td>
<td>4.2</td>
<td>4.9</td>
<td></td>
</tr>
<tr>
<td>other respiratory infection and inflammation</td>
<td>0.2</td>
<td>0.3</td>
<td>0.2</td>
<td>0.1</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td>Child and adolescent well-care visits (ages 0-21)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Vermont data not available.</td>
</tr>
<tr>
<td>Myringotomy - procedures per 1,000 children (ages 0-19)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Inpatient data on Vermonters are available, but comparable outpatient data are not from border states, e.g., outpatient procedures from NH, NY and MA.</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Tonsillectomy - procedures per 1,000 children (ages 0-19)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Inpatient data on Vermonters are available, but comparable outpatient data are not from border states, e.g., outpatient procedures from NH, NY and MA.</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

*Percentages are calculated by dividing the total number of occurrences of the event/condition (numerator) by the total number of people in the population (denominator) and multiplying by 100. Admissions per 1,000 are calculated by dividing the total number of occurrences of the event/condition (numerator) by the total number of children in the population (denominator) and multiplying by 1,000.

*US and New England managed care organization.
### Childhood and Adolescent Health Care (continued)

<table>
<thead>
<tr>
<th>Definition of the Measures</th>
<th>1998 VT Numerator</th>
<th>1998 VT Denominator</th>
<th>VT Data Source</th>
<th>US Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>National phone survey (with mail follow-up) to parents and providers. Based on completed surveys on Vermont children. Four or more doses of DTP/DT, three or more doses of poliovirus vaccine, and one or more of any measles-containing vaccine. The 95% confidence interval around the 1998 Vermont rate is +/- 4.3%. The 95% confidence interval around the U.S. rate is around +/-1%.</td>
<td>est. 16,648</td>
<td>19,070</td>
<td>NIS</td>
<td>NIS</td>
</tr>
<tr>
<td>Same definition as above, plus children also completing 3 or more doses of H influenza type b vaccine. The 95% confidence interval around the 1998 Vermont rate is +/- 4.4%. The 95% confidence interval around the U.S. rate is around +/-1%.</td>
<td>est. 16,362</td>
<td>19,070</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vermont 1998 data are the percent of all 7th grade students in Vermont who have received two doses of the measles vaccination. The US and NE MCO data are the percent of 13 year olds who received appropriate immunizations for measles, mumps and rubella during the previous year.</td>
<td>8,489</td>
<td>8,795</td>
<td>VSVSR</td>
<td>QC99</td>
</tr>
<tr>
<td>DRGs 81, 91, and 98.</td>
<td>432</td>
<td>141,347</td>
<td>VHDDS</td>
<td>HCUP</td>
</tr>
<tr>
<td>DRG 91.</td>
<td>134</td>
<td>141,347</td>
<td>VHDDS</td>
<td>HCUP</td>
</tr>
<tr>
<td>DRG 98.</td>
<td>266</td>
<td>141,347</td>
<td>VHDDS</td>
<td>HCUP</td>
</tr>
<tr>
<td>DRG 81.</td>
<td>32</td>
<td>141,347</td>
<td>VHDDS</td>
<td>HCUP</td>
</tr>
</tbody>
</table>

*Children and adolescents receiving well-care visits with a primary care provider.*

*Inpatient and same-day surgeries for ICD-9 procedure code 20.01.*

*Inpatient and same-day surgeries for ICD-9 procedure codes 28.2-28.4.*
# Heart Disease and Stroke

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Angina and chest pain - admissions per 1,000 people (all ages) (map)</td>
<td>3.9</td>
<td>3.5</td>
<td>3.1</td>
<td>2.4</td>
<td>2.2</td>
<td>3.4</td>
<td>2.8</td>
<td>2.6</td>
<td>2.4</td>
</tr>
<tr>
<td>Heart failure - admissions per 1,000 (ages 65+) (map)</td>
<td>16.7</td>
<td>17.8</td>
<td>17.9</td>
<td>16.8</td>
<td>15.7</td>
<td>23.2</td>
<td>22.5</td>
<td>23.8</td>
<td>23.4</td>
</tr>
<tr>
<td>Cardiac catheterization** admissions per 1,000 (ages 45+)</td>
<td>9.2</td>
<td>10.8</td>
<td>10.9</td>
<td>11.0</td>
<td>9.6</td>
<td>19.9</td>
<td>19.7</td>
<td>21.2</td>
<td>19.9</td>
</tr>
<tr>
<td>Cardiac catheterization** admissions per 1,000 (excluding admissions where a PTCA or CABG was also performed) (ages 45+) (map)</td>
<td>5.0</td>
<td>5.7</td>
<td>5.6</td>
<td>5.2</td>
<td>4.8</td>
<td>4.4</td>
<td>4.5</td>
<td>5.2</td>
<td>4.7</td>
</tr>
<tr>
<td>Angioplasty (PTCA)** admissions per 1,000 (excluding admissions where a CABG was also performed) (ages 45+) (map)</td>
<td>2.9</td>
<td>3.7</td>
<td>4.0</td>
<td>4.4</td>
<td>4.6</td>
<td>4.4</td>
<td>4.5</td>
<td>5.2</td>
<td>4.7</td>
</tr>
<tr>
<td>Coronary artery bypass graft (CABG) admissions per 1,000 (ages 45+) (map)</td>
<td>3.3</td>
<td>3.4</td>
<td>3.4</td>
<td>3.0</td>
<td>3.0</td>
<td>5.6</td>
<td>6.4</td>
<td>6.4</td>
<td>6.5</td>
</tr>
<tr>
<td>Stroke and other cerebrovascular disease admissions per 1,000 (ages 65+) (map)</td>
<td>13.3</td>
<td>13.9</td>
<td>14.0</td>
<td>13.7</td>
<td>13.0</td>
<td>18.1</td>
<td>18.6</td>
<td>19.1</td>
<td>18.5</td>
</tr>
<tr>
<td>Carotid endarterectomy admissions per 1,000 (ages 65+) (map)</td>
<td>2.0</td>
<td>2.8</td>
<td>2.7</td>
<td>2.9</td>
<td>3.0</td>
<td>2.4</td>
<td>3.0</td>
<td>3.0</td>
<td>3.2</td>
</tr>
<tr>
<td>Advising smokers to quit (ages 18+)</td>
<td>63%</td>
<td>62.5%</td>
<td>67.9%</td>
<td>63%</td>
<td>62.5%</td>
<td>67.9%</td>
<td>63%</td>
<td>62.5%</td>
<td>67.9%</td>
</tr>
<tr>
<td>Cholesterol management after acute cardiovascular events (ages 18-75)</td>
<td>59.1%</td>
<td>67.9%</td>
<td>59.1%</td>
<td>67.9%</td>
<td>59.1%</td>
<td>67.9%</td>
<td>59.1%</td>
<td>67.9%</td>
<td>59.1%</td>
</tr>
</tbody>
</table>

*AAdmissions per 1,000 are calculated by dividing the total number of occurrences of the event/condition (numerator) by the total number of people in the population (denominator) and multiplying by 1,000.

** Only inpatient catheterizations and angioplasties are reported here.

***Data are only available for adults in managed care organizations (MCOs) in Vermont, or 24% of adults. The state rate is the simple average of four commercial and two Medicaid MCOs.

### Heart Disease and Stroke (continued)

<table>
<thead>
<tr>
<th>Definition of the Measures</th>
<th>1998 VT Numerator</th>
<th>1998 VT Denominator</th>
<th>VT Data Source</th>
<th>US Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRGs 140 and 143.</td>
<td>1,303</td>
<td>590,883</td>
<td>VHDDS</td>
<td>HCUP</td>
</tr>
<tr>
<td>DRG 127.</td>
<td>1,142</td>
<td>72,573</td>
<td>VHDDS</td>
<td>HCUP</td>
</tr>
<tr>
<td>ICD-9 procedure codes 37.21-37.23, 88.55-88.57.  Outpatient procedures are not included here.</td>
<td>2,000</td>
<td>207,594</td>
<td>VHDDS</td>
<td>NCHS</td>
</tr>
<tr>
<td>ICD-9 procedure codes 37.21-37.23, 88.55-88.57, except if the discharge record showed a PTCA or CABG during the stay.  Outpatient procedures are not included here.</td>
<td>1,004</td>
<td>207,594</td>
<td>VHDDS</td>
<td></td>
</tr>
<tr>
<td>ICD-9 procedure codes 36.01-36.02, 36.05, except if the discharge record showed a CABG during the stay.  Outpatient procedures are not included here.</td>
<td>963</td>
<td>207,594</td>
<td>VHDDS</td>
<td>NCHS</td>
</tr>
<tr>
<td>ICD-9 procedure codes 36.10-36.17, 36.19, 36.2.</td>
<td>618</td>
<td>207,594</td>
<td>VHDDS</td>
<td>NCHS</td>
</tr>
<tr>
<td>DRGs 14-17.</td>
<td>946</td>
<td>72,573</td>
<td>VHDDS</td>
<td>HCUP</td>
</tr>
<tr>
<td>ICD-9 procedure code 38.12.</td>
<td>218</td>
<td>72,573</td>
<td>VHDDS</td>
<td>NCHS</td>
</tr>
</tbody>
</table>

Adults age 18 and older who currently smoke or have recently quit, and have received advice to quit smoking from a medical professional.  

Adults age 35 and older who were hospitalized with a diagnosis of acute myocardial infarction and received a prescription for beta blockers at discharge.  

Adults age 18 to 75 who were hospitalized for specific cardiovascular diagnoses or procedures who subsequently have appropriate cholesterol management.
## Behavioral Health Care

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of people hospitalized for behavioral health care (mental health and chemical dependency)</td>
<td>0.5%</td>
<td>0.5%</td>
<td>0.5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavioral health care hospitalizations - admissions per 1,000 people - all ages</td>
<td>7.0</td>
<td>7.1</td>
<td>7.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average length of stay for behavioral health admissions - all ages</td>
<td>17</td>
<td>16</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of people receiving outpatient mental health services - ages 0-64</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6.7%</td>
<td></td>
</tr>
<tr>
<td>Percent of people receiving outpatient services for chemical dependency - ages 0-64</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.0%</td>
<td></td>
</tr>
<tr>
<td>Antidepressant medication management (ages 18+)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Vermont data is not available.</td>
<td>54% 59%</td>
</tr>
</tbody>
</table>

*Percents are calculated by dividing the total number of occurrences of the event/condition (numerator) by the total number of people in the population (denominator) and multiplying by 100. Admissions per 1,000 people are calculated by dividing the total number of occurrences of the event/condition (numerator) by the total number of people in the population (denominator) and multiplying by 1,000. Average length of stay is calculated by dividing the total number of days people were hospitalized (numerator) by the total number of hospital stays for that condition (denominator). **US and New England managed care organizations.
### Behavioral Health Care (continued)

<table>
<thead>
<tr>
<th>Definition of the Measures</th>
<th>VT Data Source</th>
<th>MCO Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of Vermonters who were hospitalized for behavioral health care services (mental health and chemical dependency, DRGs 424-437) in and outside of Vermont, including community hospitals, specialized facilities, and the Veterans Administration Hospital in Vermont.</td>
<td>DDMHS99</td>
<td></td>
</tr>
<tr>
<td>Total hospitalizations and rehospitalizations for Vermonters for behavioral health care services. This number differs from the percent hospitalized (see above) in that it is a count of all of the hospitalizations of all of the people counted above. It is also a rate per 1,000 (rather than per 100).</td>
<td>DDMHS99</td>
<td></td>
</tr>
<tr>
<td>Average length of hospital stay for Vermonters hospitalized for behavioral health care. Total days divided by total admissions.</td>
<td>DDMHS99</td>
<td></td>
</tr>
<tr>
<td>Vermonters who received mental health services in an outpatient (ambulatory) setting.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vermonters who received chemical dependency services in an outpatient (ambulatory) setting.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>This measure has three components: optimal practitioner contacts for medication management; effective acute care treatment; and effective continuation phase treatment.</td>
<td></td>
<td>QC99</td>
</tr>
</tbody>
</table>
### Cancer

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of women receiving breast cancer screening - ever had a mammogram (age 40+)</td>
<td>86%</td>
<td>84%</td>
<td>84%</td>
<td></td>
<td></td>
<td></td>
<td>84%</td>
<td>85%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of women receiving breast cancer screening (mammography) in past 2 years (age 50+)</td>
<td>60%</td>
<td>70%</td>
<td>75%</td>
<td>74%</td>
<td>77%</td>
<td></td>
<td>70%</td>
<td>74%</td>
<td>75%</td>
<td>72%</td>
<td>75%</td>
</tr>
<tr>
<td>Percent of women receiving cervical cancer screening (Pap smear) in past 3 years (age 18+)</td>
<td>85%</td>
<td>90%</td>
<td>84%</td>
<td>84%</td>
<td>86%</td>
<td></td>
<td>85%</td>
<td>85%</td>
<td>70%</td>
<td>75%</td>
<td></td>
</tr>
<tr>
<td>Percent of people receiving colorectal cancer screening - fecal occult blood testing in past 2 years (50+)</td>
<td>50%</td>
<td>50%</td>
<td>35%</td>
<td></td>
<td></td>
<td></td>
<td>36%</td>
<td>34%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of people receiving colorectal cancer screening - sigmoidoscopy ever done (50+)</td>
<td>40%</td>
<td>50%</td>
<td>40%</td>
<td></td>
<td></td>
<td></td>
<td>41%</td>
<td>38%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prostatectomy - procedures per 1,000 men (ages 45+)</td>
<td>Inpatient data on Vermonters are available, but comparable outpatient data are not from border states, e.g., outpatient procedures from NH, NY, and MA.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

*Percents are calculated by dividing the total number of occurrences of the event/condition (numerator) by the total number of people in the population (denominator) and multiplying by 100. Procedures per 1,000 are calculated by dividing the total number of occurrences of the event/condition (numerator) by the total number of people in the population (denominator) and multiplying by 1,000.

### Diabetes

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of people with diabetes who have an annual eye exam (ages 18+)</td>
<td>70%</td>
<td>75%</td>
<td>73%</td>
<td>73%</td>
<td>79%</td>
<td></td>
<td>56%</td>
<td>41%</td>
</tr>
</tbody>
</table>

*Percents are calculated by dividing the total number of occurrences of the event/conditions (numerator) by the total number of people in the population (denominator) and multiplying by 100.

**US and New England managed care organizations.
### Cancer (continued)

<table>
<thead>
<tr>
<th>Definition of the Measures</th>
<th>1998 VT Numerator</th>
<th>1998 VT Denominator</th>
<th>VT Data Source</th>
<th>US Data Source</th>
<th>MCO Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Based on a phone survey of Vermont women ages 40 years and older, the percent who reported every having a mammogram. The U.S. rate is the median rate among the states.</td>
<td>est. 115,176</td>
<td>136,788</td>
<td>NCCD99</td>
<td>NCCD99</td>
<td></td>
</tr>
<tr>
<td>Based on a phone survey of Vermont women ages 50 years and older, the percent who reported having a mammogram in the past two years. The U.S. rate is the median rate among the states. MCO data is based on claims data and/or medical records review.</td>
<td>est. 66,867</td>
<td>86,840</td>
<td>NCCD99</td>
<td>NCCD99</td>
<td>QC99</td>
</tr>
<tr>
<td>Based on a phone survey of Vermont women ages 18 years older, the percent who reported having a Pap smear in the past 3 years. The U.S. rate is the median rate among the states. MCO data is based on claims data and/or medical records review.</td>
<td>est. 199,165</td>
<td>231,587</td>
<td>NCCD99</td>
<td>NCCD99</td>
<td>QC99</td>
</tr>
<tr>
<td>Based on a phone survey of Vermonters ages 50 years and older, the percent who reported having a fecal occult test in the past two years. The U.S. rate is the median rate among the states.</td>
<td>1997 VT est. 54,385</td>
<td>155,386</td>
<td>NCCD98</td>
<td>NCCD99</td>
<td></td>
</tr>
<tr>
<td>Based on a phone survey of Vermonters ages 50 years and older, the percent who reported ever having a sigmoidoscopy. The U.S. rate is the median rate among the states.</td>
<td>est. 62,465</td>
<td>155,386</td>
<td>NCCD98</td>
<td>NCCD99</td>
<td></td>
</tr>
</tbody>
</table>

Inpatient and same-day surgeries for ICD-9 procedure codes 60.21, 60.29, 60.3-60.5, 60.61, 60.62, and 60.69.

### Diabetes (continued)

<table>
<thead>
<tr>
<th>Definition of the Measures</th>
<th>1998 VT Numerator</th>
<th>1998 VT Denominator</th>
<th>VT Data Source</th>
<th>US Data Source</th>
<th>MCO Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Based on a phone survey of Vermonters (18 or older) in 1998 who were told by a doctor that they had diabetes and reported that they had an eye exam in the past year. The rate excludes those who did not know or refused to answer. The 1996 Vermont rate combined 1996 and 1997 data. U.S. rate is based on mean data from 39 states. MCO data is based on claims data and/or medical records review.</td>
<td>est. 15,048</td>
<td>est. 19,000</td>
<td>VTBRF98</td>
<td>HP2010</td>
<td>QC99</td>
</tr>
</tbody>
</table>
### Additional High Volume Procedures

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Back and neck surgery (laminectomy) - admissions per 1,000 people (ages 20-64) (map)</td>
<td>2.2</td>
<td>1.9</td>
<td>1.9</td>
<td>1.7</td>
<td>1.3</td>
<td>1.9</td>
<td>1.7</td>
<td>1.7</td>
<td>1.8</td>
</tr>
<tr>
<td>Hysterectomy - admissions per 1,000 (women ages 15+) (map)</td>
<td>4.2</td>
<td>4.3</td>
<td>4.5</td>
<td>4.5</td>
<td>4.6</td>
<td>5.1</td>
<td>5.3</td>
<td>5.4</td>
<td>5.5</td>
</tr>
<tr>
<td>Non-obstetric dilation and curettage - procedures per 1,000 (women ages 15-64)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Inpatient data on Vermonters are available, but comparable outpatient data are not from border states, i.e., outpatient procedures from NH, NY, and MA.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cholecystectomy (open and closed) - procedures per 1,000 (ages 30+)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Inpatient data on Vermonters are available, but comparable outpatient data are not from border states, i.e., outpatient procedures from NH, NY, and MA.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Admissions or procedures per 1,000 are calculated by dividing the total number of occurrences of the event/condition (numerator) by the total number of people in the population (denominator) and multiplying by 1,000.

### Additional High Volume Services for the Elderly

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hip, knee and ankle replacement - admissions per 1,000 people (ages 65+) (map)</td>
<td>11.5</td>
<td>11.7</td>
<td>12.4</td>
<td>12.4</td>
<td>12.0</td>
<td>11.7</td>
<td>11.7</td>
<td>12.6</td>
<td>12.2</td>
</tr>
<tr>
<td>Total hip replacement - admissions per 1,000 (ages 65+)***</td>
<td>3.4</td>
<td>3.4</td>
<td>3.7</td>
<td>3.8</td>
<td>4.4</td>
<td>2.5</td>
<td>2.7</td>
<td>2.8</td>
<td>2.9</td>
</tr>
<tr>
<td>Total knee replacement - admissions per 1,000 (ages 65+)***</td>
<td>4.3</td>
<td>5.2</td>
<td>4.9</td>
<td>5.6</td>
<td>6.0</td>
<td>4.6</td>
<td>4.7</td>
<td>5.4</td>
<td>5.2</td>
</tr>
<tr>
<td>Reduction of fracture of the femur - admissions per 1,000 (ages 65+)</td>
<td>5.1</td>
<td>5.5</td>
<td>5.8</td>
<td>5.2</td>
<td>5.2</td>
<td>4.4</td>
<td>4.6</td>
<td>5.4</td>
<td>4.9</td>
</tr>
<tr>
<td>Total adult respiratory diseases - admissions per 1,000 (ages 65+) (map)</td>
<td>24.1</td>
<td>25.8</td>
<td>25.3</td>
<td>25.3</td>
<td>27.1</td>
<td>23.9</td>
<td>24.6</td>
<td>25.4</td>
<td>26.0</td>
</tr>
<tr>
<td>simple pneumonia and pleurisy</td>
<td>15.5</td>
<td>16.7</td>
<td>15.9</td>
<td>16.4</td>
<td>17.5</td>
<td>13.3</td>
<td>13.7</td>
<td>14.2</td>
<td>14.6</td>
</tr>
<tr>
<td>chronic obstructive pulmonary disease (COPD)</td>
<td>8.6</td>
<td>9.1</td>
<td>9.4</td>
<td>8.9</td>
<td>9.7</td>
<td>10.6</td>
<td>10.9</td>
<td>11.2</td>
<td>11.4</td>
</tr>
<tr>
<td>Major Surgery on the large intestines - admissions per 1,000 (ages 65+) (map)</td>
<td>4.5</td>
<td>4.5</td>
<td>4.3</td>
<td>4.5</td>
<td>4.3</td>
<td>3.7</td>
<td>3.7</td>
<td>3.9</td>
<td>3.9</td>
</tr>
<tr>
<td>Percent of older adults receiving flu shots in the past year (ages 65+)</td>
<td><strong>HP 2000 Goal</strong></td>
<td>60.0%</td>
<td>64.1%</td>
<td>69.5%</td>
<td>65.5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Admissions or procedures per 1,000 are calculated by dividing the total number of occurrences of the event/condition (numerator) by the total number of people in the population (denominator) and multiplying by 1,000. Percents are calculated by dividing the total number of occurrences of the event/condition (numerator) by the total number of people in the population (denominator) and multiplying by 100.

** For 1998, definitions were expanded to include new procedure codes. Rates for prior years have not been recalculated.
**Additional High Volume Procedures (continued)**

<table>
<thead>
<tr>
<th>Definition of the Measures</th>
<th>1998 VT Numerator</th>
<th>1998 VT Denominator</th>
<th>VT Data Source</th>
<th>US Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICD-9 procedure codes 3.02, 3.09, 80.50-80.51, 80.59.</td>
<td>473</td>
<td>360,180</td>
<td>VHDDS</td>
<td>NCHS</td>
</tr>
<tr>
<td>ICD-9 procedure codes 68.3-68.5, 68.51, 68.59, 68.6-68.9.</td>
<td>1,114</td>
<td>244,389</td>
<td>VHDDS</td>
<td>NCHS</td>
</tr>
</tbody>
</table>

| Inpatient and same-day surgeries for ICD-9 procedure code 69.09. |

| Inpatient and same-day surgeries for ICD-9 procedure codes 51.21-51.24. |

**Additional High Volume Services for the Elderly (continued)**

<table>
<thead>
<tr>
<th>Definition of the Measures</th>
<th>1998 VT Numerator</th>
<th>1998 VT Denominator</th>
<th>VT Data Source</th>
<th>US Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRG 209.</td>
<td>871</td>
<td>72,573</td>
<td>VHDDS</td>
<td>HCUP</td>
</tr>
</tbody>
</table>

| ICD-9 procedure code 81.51. For 1998, procedure code 81.53 has been added. | 319 | 72,573 | VHDDS | NCHS |

| ICD-9 procedure code 81.54. For 1998, procedure code 81.55 has been added. | 436 | 72,573 | VHDDS | NCHS |

| ICD-9 procedure codes 79.05, 79.15, 79.25, and 79.35. | 379 | 72,573 | VHDDS | NCHS |

| DRGs 88 and 89. | 1,969 | 72,573 | VHDDS | HCUP |
| DRG 89. | 1,268 | 72,573 | VHDDS | HCUP |
| DRG 88. | 701 | 72,573 | VHDDS | HCUP |

| ICD-9 procedure codes 45.71-45.79. | 310 | 72,573 | VHDDS | NCHS |

<table>
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<tr>
<th>Elderly Vermonters receiving an influenza vaccination in the past year.</th>
<th>1997 VT Numerator</th>
<th>1997 VT Denominator</th>
<th>VT Data Source</th>
<th>US Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>est. 50,188</td>
<td>72,213</td>
<td>NCCD98</td>
<td>NCCD98</td>
<td></td>
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</table>
Data Sources

Vermont, New England and U.S. data come from a variety of sources. Also see the bibliography for the complete reference, where available.

Vermont Data

<table>
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<tr>
<th>Short Source Name</th>
<th>Data Source</th>
<th>About the Data</th>
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</thead>
<tbody>
<tr>
<td>BC ffs, BC VHP, BCmcaid</td>
<td>BlueCross BlueShield of Vermont</td>
<td>Based on data for Vermonters enrolled in commercial fee-for-service and managed care plans and a Medicaid managed care plan.</td>
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<tr>
<td>DDMHS99</td>
<td>Vermont Department of Developmental and Mental Health Services</td>
<td>Based on data gathered on Vermont residents hospitalized for mental health or substance abuse at the Vermont State Hospital, the Brattleboro Retreat, Veterans’ Administration Hospitals in VT and MA, and general hospitals in VT, NH, MA and NY.</td>
</tr>
<tr>
<td>HCA99</td>
<td>Health Care Administration</td>
<td>Based on survey data for Vermonters enrolled in four commercial (BC VHP, KP, MVP, and TVHP) and two Medicaid managed care plans (BCmcaid and KPmcaid), provided to VPQHC under special contract with HCA.</td>
</tr>
<tr>
<td>Hospice Council</td>
<td>Hospice Council of Vermont</td>
<td>Based on survey data collected by the Hospice Council of Vermont on patients in hospice care.</td>
</tr>
<tr>
<td>KPcomm, KPmcaid</td>
<td>Kaiser Permanente</td>
<td>Based on data for Vermonters enrolled in commercial and Medicaid managed care plans.</td>
</tr>
<tr>
<td>Medicaid ffs</td>
<td>Office of Vermont Health Access</td>
<td>Based on data for Vermonters who are beneficiaries in the fee-for-service Medicaid program. Data on Vermonters who are beneficiaries in a Medicaid managed care plans are reported in BCmcaid and KPmcaid.</td>
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<tr>
<td>MVP</td>
<td>MVP Health Plan</td>
<td>Based on data for Vermonters enrolled in a commercial managed care plan.</td>
</tr>
<tr>
<td>NIS</td>
<td>Centers for Disease Control and Prevention</td>
<td>National Immunization Survey - National phone survey (with mail follow-up) to parents and providers of Vermont children to estimate the vaccination coverage of children 19 to 33 months old.</td>
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<tr>
<td>TVHP</td>
<td>The Vermont Health Plan</td>
<td>Based on data for Vermonters enrolled in a commercial managed care plan.</td>
</tr>
<tr>
<td>VHDDS</td>
<td>Vermont Department of Health</td>
<td>Vermont Hospital Discharge Data Set - Special analyses of Vermont resident discharges from VT (including the Veterans’ Administration in White River Junction), NH, NY, and MA hospitals.</td>
</tr>
<tr>
<td>VSVSR</td>
<td>Vermont Department of Health</td>
<td>Vermont School Vaccine Survey Report - Report for the Centers for Disease Control and Prevention based on information submitted by schools.</td>
</tr>
<tr>
<td>VTBRF98</td>
<td>Vermont Department of Health</td>
<td>Behavioral Risk Factor Surveillance Survey - Survey of Vermonters age 18 or older, about their health-related behavior.</td>
</tr>
<tr>
<td>VDH 2000b</td>
<td>Vermont Department of Health</td>
<td>Cancer death rates for Vermonters, age-adjusted per 100,000 to the 1970 U.S. standard population.</td>
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New England and National Data

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<tr>
<th>Short Source Name</th>
<th>Data Source</th>
<th>About the Data</th>
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<tr>
<td>HCUP</td>
<td>Agency for Healthcare Research and Quality</td>
<td>Health Care Cost and Utilization Project - National hospital discharge data statistics based on a 20% sample of U.S. community hospitals in 22 states, including more than 1,000 hospitals and 7.1 million discharge records.</td>
</tr>
<tr>
<td>HP2010</td>
<td>U.S. Department of Health and Human Services</td>
<td>Healthy People 2010 - Report on national health targets for the year 2010, including data on progress to date on national objectives for health promotion and disease prevention.</td>
</tr>
<tr>
<td>NCCD98, NCCD99</td>
<td>National Center for Chronic Disease Prevention and Health Promotion</td>
<td>Behavior Risk Factor Surveillance Survey of adults interviewed about their health-related behavior. Based on phone surveys conducted by each state of a sample of adults age 18 or older interviewed about their health-related behavior.</td>
</tr>
<tr>
<td>NCHS</td>
<td>National Center for Health Statistics</td>
<td>National Hospital Discharge Survey, National survey of approximately 300,000 discharge records from 474 short-stay hospitals.</td>
</tr>
<tr>
<td>NIS</td>
<td>Centers for Disease Control and Prevention</td>
<td>National Immunization Survey - National phone survey (with mail follow-up) to parents and providers to estimate the vaccination coverage of children 19 to 33 months old.</td>
</tr>
<tr>
<td>QC96, QC99</td>
<td>National Committee for Quality Assurance</td>
<td>Quality Compass 1996 - Detailed utilization statistics based on 250 managed care plans who voluntarily participated. The New England data was based on 20 managed care plans. Quality Compass 1999 - Summary of regional and national statistics based on 359 managed care plans with over 70 million members. The plans voluntarily participated in supplying the data.</td>
</tr>
<tr>
<td>USNat</td>
<td>U.S. Vital Statistics, National Center for Health Statistics</td>
<td>Birth certificate data collected in each state and aggregated nationally by the Division of Vital Statistics, National Center for Health Statistics.</td>
</tr>
</tbody>
</table>
Bibliography


Vermont Department of Developmental and Mental Health Services, Inpatient Behavioral Health Care Services, Data Book, Vermont Residents, 1996, 1999. [DDMH599]


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Produced under a contract with the Vermont Department of Banking, Insurance, Securities and Health Care Administration with financial support from managed care organizations, health insurers and hospitals that serve Vermonters.

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