

West Virginia State Health Plan

*At-Risk Populations**

I. BACKGROUND

Strictly speaking, the health of the entire population is continually “at risk.” Everyone is at some risk of incurring some disease, injury, disability, or even untimely death. But these risks are neither random nor evenly distributed. They are variable, occurring more frequently and at substantially higher rates among certain populations than others. Although the risk to health comes in many forms and is highly variable, there is some predictability, particularly among large populations, of the relative risk for disease and injury among distinct subgroups within the population.

Identifying those in a population at high risk is the first step toward developing the services required, as well as to using resources more effectively and efficiently. This is already well under way nationally, and in West Virginia, in the form of the Healthy People 2000 program. The major goals of Healthy People 2000 are to increase the span of healthy life, reduce health disparities, and make preventive health care services available to all. West Virginia Healthy People 2000 has identified 22 priority areas in which it has established target health improvement goals and objectives. An interim report, *West Virginia Healthy People 2000: Midcourse Review 1995*, which summarizes the progress made between 1990 and 1995 toward meeting these goals and objectives was released in 1997. The rationale for selecting these goals and objectives was based to a substantial degree on the fact that the target populations are at relatively high health risk.

Population groups identified in *Healthy People 2000: West Virginia Objectives* and in the progress report are a good starting point for identifying high-risk populations that require special attention. Two additional starting points are the comparative state health care statistics found in *Health Care State Rankings, 1999: Health Care in the 50 United States* and the comparative Medicare patient service use profiles found in *The Dartmouth Atlas of Health Care: The South Atlantic States*. All of these data have been analyzed to identify and select priorities among high-risk population groups.

II. SYSTEM ASSESSMENT

Individual susceptibility to disease and injury is affected by a number of demographic, social, economic, environmental, and biological variables. Age, gender, education and income levels, biological predisposition to certain diseases, environmental conditions, employment status, and, in some circumstances, race often affect markedly the health of individuals and certain populations. Generally, young children experience more illness and disability days from short, acute episodes of illness and from certain types of unintentional injury than do adults of all ages. The frequency of chronic diseases increases with age, as does the likelihood of disability and some types of injury, particularly accidents associated with limited mobility and flexibility.

The incidence and prevalence of many conditions increase not only with age but also with higher levels of poverty and lower educational levels. These factors often interact synergistically, reinforcing one another and magnifying economic, social, and health effects. Consequently, a poor, undereducated elderly person is more likely to have

*Note: Tables and maps referenced but not contained here may be viewed, and obtained in their entirety, at the West Virginia Health Care Authority.

more frequent and more severe health problems than a relatively prosperous, well-educated elderly person. So, too, an infant born to a poor, under educated family is more likely to have significant health problems early in life than one born to prosperous, better educated parents. Analysis of these factors helps establish relative levels of risk and determine the types of services and facilities that will be required to meet community need.

A. Population Size and Composition

West Virginia's demography is extraordinary, so atypical that understanding recent and expected population dynamics is critical to identifying health risks and corresponding intervention strategies and service needs. While the national population and those of most states have grown dramatically in the last half-century, West Virginia has lost population since 1950. The U. S. Census Bureau projects a total state population of 1.841 million in the year 2000. If accurate, this would be a decrease of nearly 9% from the 2,005,552 recorded in 1950. The population has fluctuated considerably over these decades, increasing with the early "baby boom" spurt between 1945 and 1950, decreasing as a result of substantial net outmigration in the 1950s and the 1960s, rebounding somewhat in the 1970s, and falling again in the 1980s and the late 1990s.

Census Bureau year 2000 projections, which forecast a modest increase from 1995, may be too optimistic. More recent census estimates show population decreases in both 1996 and 1997. Assuming these estimates are reasonably correct, it is unlikely that there will be a reversal and aggregate growth of 25,000 persons between 1998 and 2000. It is likely that the next census will find a population closer to 1.820 million than to the 1.841 projected. There is little evidence of likely significant changes in the total population in the near future. The Census Bureau projects the 2025 state population to be 1.845 million, essentially no change from the 2000 projection of 1.841 million.

More significantly, as noted prominently in the state's 1997 West Virginia vital statistics report, there was an actual natural decrease in population for the first time in that year. This remarkable development resulted from the combination of low fertility and low birth rates and a high and rising death rate. Comparative natality and mortality date for West Virginia, the nation, and the five contiguous states are presented in Table AR1 (natality, entries 1-34; mortality & morbidity, entries 35-79) and Maps AR 1, AR 3, and AR 9-23.

As negative population growth suggests, West Virginia's population is aging rapidly relative to that of most other states and the nation. The relative shift in population distribution and how the resultant distribution compares with the national population are shown in Table 2.

These data document extraordinary change, with major implications for the demand for, and the provision of, health services. Since 1950, there has been a dramatic shift upward in age within the West Virginia population. The median age of the population is now among the oldest in the nation and is continuing to increase more rapidly than that of the nation and nearby states. The 1997 West Virginia median age, 38.1 years, was 3.4 years older than the national median of 34.9 years, and the disparity is continuing to grow. Between 1990 and 1997, the national median age increased by 2.1 years, whereas the West Virginia median grew by 2.8 years, about 33% more than the nation.

In addition to being much older than the populations of the nation and neighboring states, distinctive attributes of the West Virginia population include:

- a small minority component, less than 4% of total;
- a slightly higher –than-average female ratio, 51.7% of total;

- a very low population density and a very high rural ratio, with 64% of population living in areas designated as rural; and
- a comparatively low fertility rate, 21% below the national rate.

The age distribution of the West Virginia population is the single most important determinant of community health status, and of the type and amount of health care that is likely to be required. Given the comparatively large percentage of the population that is now 65 years of age or older (15.1%), the unusually large percentage that is now in the 45 to 64 years age group (24%), the comparatively small percentage under 25 years of age (<33%), and the low fertility rate (51.8 live births per 1,000 women aged 15-44), the West Virginia population is going to continue to age more rapidly than the populations of the nation and neighboring states for the next 15 to 20 years. In 1997, for example, 16.1% of the state population was between 50 and 64 years of age, compared with 13.9% nationally. Aging West Virginians—the more than one-third of the population now 50 years of age and older—regardless of gender, location, or race, will be by far the state’s largest at-risk population for the next two decades.

Table AR 2 West Virginia Population Proportional (Percent) Distribution by Age Group 1950-1997										
AGE GROUP	West Virginia								United States	
							% Change 1950- 1997	% Change 1990- 1997	1997	Difference: WV vs US
	1950	1960	1970	1980	1990	1997				
0-5 YEARS	12.0	10.6	7.9	7.5	6.0	5.7	-52.5	-5.0	7.2	20.8% Below U. S.
5-14 YEARS	19.8	21.6	19.2	16.0	14.2	12.4	-37.4	-14.5	14.4	13.9% Below U. S.
15-24 YEARS	16.3	14.1	17.3	17.9	14.6	14.6	-11.2	-0-	13.7	6.6% Above U. S.
25-44 YEARS	28.0	24.5	22.0	26.4	29.7	28.2	0.7	-5.1	31.2	9.6% Below U. S.
45-64 YEARS	17.0	20.3	22.5	19.9	20.5	24.0	41.2	17.1	20.7	15.9% Above U. S.
65+ YEARS	6.9	8.9	11.1	12.3	15.0	15.1	118.8	0.7	11.3	33.6% Above U. S.
85+ YEARS						1.7			1.5	16.7% Above U. S.

Source: Data, U. S. Department of Commerce, Bureau of the Census, 1999. Calculations and Presentation, MacQuest Consulting, 1999.

B. Natality

Fertility and birth rates have been falling, nationally and in Appalachia, throughout the 1990s. Although the decrease in West Virginia's fertility rate during the last five years was less than that of the nation and four of the five contiguous states (Table AR 1, natality, entries 1-34, Maps AR 2-8), both its fertility and birth rates have trailed considerably below those of the nation and those of its neighboring states for the last two decades. There is little indication that these patterns will change soon.

Nationally, infant mortality has decreased steadily for the last half century, from nearly 30 infant deaths per 1,000 live births in 1950 to 7.1 in 1997. Generally, this same steady pattern of improvement has been evident in West Virginia, falling from 31.4 infant deaths per live births in 1950 to 7.2 in 1996. For reasons that are not yet explained, the reported West Virginia rate increased dramatically in 1997, jumping to 9.5 deaths per 1,000 live births, an increase of nearly 32%. The sharp increase occurred among white infants, but not among black and other minority group infants. Between 1996 and 1997 the reported infant mortality rate among whites increased by nearly 36% percent and that among blacks decreased by nearly 7%. It is noteworthy that, even with the decrease in 1997, the black West Virginia infant mortality rate was still nearly 47% higher than the national rate for blacks.

Any increase in infant mortality is problematic. The rate of infant deaths has long been regarded as a bellwether indicator of community health status and well-being. Generally, infant health is thought to reflect the health status of both the child and the mother and, by extension, the health and well-being of the family from which the child comes. In aggregate, the health of infants may also reflect the environment and conditions in which children live.

Because of the value placed on the health and well-being of infants, increases in the death rate may be seen as societal and health system failures. The increase reported in 1997 is especially troubling, coming after the progressive reduction in the infant death rate achieved over the last 50 years. As in many states, the reduction was achieved with hard work and an array of programs and initiatives that greatly expanded access to medical care and other needed services.

Because it is as yet unclear what caused the 1997 increase, considerable caution must be used in interpreting it. There have been occasional dramatic changes, both up and down, in the infant death rate in the past. The 1997 report may prove to be an anomaly. In any event, given the importance of infant mortality as an indicator of community health and the fact that the West Virginia rate continues to be higher than the national rate, infants, particularly those born to minority, teenage, and poor parents, must be viewed as a significant at-risk population. By extension, the mothers and families of those infants should be viewed as a high-risk group.

C. Morbidity and Mortality

The relative health risks of a given population can be approximated by examining its health history, particularly with regard to how demographic, economic, environmental, and personal behavior factors relate to morbidity and mortality and affect the need for care and the use of and reliance upon health care services. Table AR 1 summarizes and compares 168 health and health-related measures or indicators for the United States, West Virginia, and its five neighboring states. These indicators, selected from more than 500 measures reviewed for each year between 1992 and 1997, show that the risk to good health is considerably higher among West Virginians than in the nation generally, and is higher than the risk generally found in the five contiguous states. These data are organized in six subgroups and permit both absolute and relative comparison of health and related indices. These data are consistent with, and reinforce, the data and information in state vital statistics reports.

Additional measures of health disparity and of the unequal claim on health care resources are the differences revealed by small area analysis in the use of high variation health care services. These are documented for West Virginia Medicare patients in *The Dartmouth Atlas of Health Care: The South Atlantic States*. Selected

variations among Medicare patients are documented for all major West Virginia hospital service areas. These findings are consistent with the data and interpretations in Table AR1 and with state vital statistics data and reports. In combination with state vital statistics, these two data sets provide a reasonably good guide to the identity of high health risk populations in West Virginia.

Comparison of the leading causes of morbidity and death in West Virginia with the leading causes nationally, and with those in neighboring states, is highly instructive. The results are shown in Table AR 1 (Mortality & Morbidity, Entries 35-79), Maps AR1, AR3, AR 9-23, and Table AR 3 below. As might be expected, given the importance of age distribution, death rates in West Virginia are much higher than those found nationally and in contiguous states.

In 1997, the most recent year for which comparable data are available, the West Virginia crude death rate, 1,149.3 deaths per 1,000 population, exceeded the U. S. rate, 865 deaths per 1,000 population, by 32.9%. Slightly more than half of this difference can be explained by West Virginia's older population. Age adjustment to the U. S. population distribution (the 1990 census distribution) yields a West Virginia death rate that exceeds the national rate by 16.8%. This is a major increase from a West Virginia/U.S. age-adjusted differential of 10.6% in 1995. Thus, the problem of excess deaths has gotten considerably worse in recent years. Some, but not the majority, of this change can be attributed to the rapid aging of the West Virginia population (because the age adjustment is to the 1990 United States population and because West Virginia's population is aging more rapidly than the national population, the adjustment reflects less fully the magnitude of the difference in age distribution between the two populations the greater the distance [time] from 1990). Had the West Virginia age-specific death rate been essentially the same as the national rate, there would have been 3,506 fewer deaths in the state. Stated differently, there were about 3,500 more deaths in the state in 1997 than would be expected given the age profile of the state population.

Excess deaths, and the morbidity that precedes death, in all of the leading causes of death categories are reason for great concern. Given the high variance from the national experience and that of most neighboring states, and the greater potential of having near-term positive effects from intervention, five of the 10 leading causes may be worthy of special attention and effort: diabetes, diseases of the heart, chronic obstructive pulmonary disease, suicide, and unintentional injuries. It is noteworthy that, in addition to being found at much higher rates in West Virginia, three of the five (heart disease, unintentional injuries, and suicide) are major contributors to the large number of potential years of life lost because of premature death in the state each year. Lifestyle and behavioral factors play a role in the incidence and prevalence of all of these conditions, and thus change should be possible through education and behavior modification, as well as through clinical intervention.

**Table AR 3
Leading Causes of Death
West Virginia & United States, 1997**

CAUSE OF DEATH	West Virginia			United States Death Rate	West Virginia Excess Over U.S. (Percent)
	Deaths	Crude Death Rate	Age-Adjusted Death Rate*		
Diseases of the Heart	6,880	378.9	328.8	271.2	21.2
Malignant Neoplasms	4,766	262.4	228.5	200.8	13.8
Cerebrovascular Diseases	1,282	70.6	61.2	59.7	2.4
Chronic Obstructive Pulmonary Disease	1,151	63.4	54.4	41.3	31.6
Unintentional Injuries, All Forms	788	43.4	42.1	34.5	22.2
Pneumonia & Influenza	712	39.2	34.0	33.0	2.9
Diabetes Mellitus	687	37.8	32.8	23.3	40.8
Nephritis, Nephrotic Syndrome & Nephrosis	267	14.7	12.8	9.6	34.0
Suicide	261	14.4	14.2	11.1	27.8
Septicemia	218	12.0	10.5	8.4	25.0

Source: *West Virginia Vital Statistics 1997*, West Virginia Bureau for Public Health, March 1999.

*Rates adjusted by age to the 1990 U. S. population, U. S. Bureau of the Census

D. Behavioral Factors

Personal behavior and, over time, lifestyle generally are often critical factors in increasing or decreasing the risk of disease, injury, or death. Many of these risk factors have been identified already and are being followed by the West Virginia Bureau for Public Health as part of the Healthy People 2000 campaign. In 1997 the Bureau issued an update on progress entitled *West Virginia Healthy People 2000: Midcourse Review 1995*. In 1998, the Bureau published the results of its 1996 statewide survey of behavioral risk factors entitled *West Virginia 1996 Behavioral Risk Factor Survey*. The survey was a telephone interview (random dialing) of noninstitutionalized adults 18 years of age and older. Questions were asked about behaviors that may place individuals at risk of preventable illness and death. The results for nonuse of seatbelts, hypertension, obesity and overweight, sedentary lifestyle, tobacco use, and alcohol misuse are summarized below. These findings are supported by the

comparative data for the nation and neighboring states presented in Table AR 1 (behavioral factors, entries 155-168).

1. Use of Seatbelts

West Virginia's seatbelt law has proved effective in helping to decrease nonuse of seatbelts. By the third full year under the law, there was a sharply lower rate of nonuse than in years immediately before the law took effect. Prevalence of nonuse in 1996 was less than half of that in 1992, the last full year without the law. Between 1992 and 1995, the West Virginia rate of seatbelt nonuse decreased from 5th to 35th highest among the states that measured this behavior in 1996. Given the state's high motor vehicle death rate, this change is encouraging.

Variations in the use of seatbelts was found to be associated with age, gender, education levels, and income:

- the highest rate of nonuse, 26%, was among the younger age group (18-24 years);
- in all age groups, men reported higher nonuse than women;
- persons without a high school diploma reported a nonuse rate of 23%, compared with a 10% nonuse rate for those with a college education;
- men with fewer than 12 years of education reported a 29% nonuse rate, and
- persons with household income of less than \$15,000 reported a nonuse rate of 25%, compared with a rate of 9% among those with incomes of \$50,000 or more.

2. Hypertension Awareness

Historically, West Virginians have reported high rates of hypertension, consistently ranking near the top among states nationally. Reported prevalence of adults who have ever been informed they have high blood pressure was 27%. The rate remains substantially above the West Virginia Healthy People 2000 target level (<15%).

The survey found that:

- those with lower education levels and lower household income report higher rates, and
- significantly higher prevalence was reported among women 55 years of age and older.

3. Obesity

Prevalence of obesity (weighing at least 20% over ideal weight) remains high. Reported prevalence increased to about 37% in 1996. This is far short of the target level of 26% prevalence and places West Virginia near the top among states with high obesity levels. It is a persistent problem. West Virginia has ranked near the top among states with high obesity levels in 12 of the last 13 years.

The survey found that:

- higher rates of obesity were reported among those in the lower education and income level; 41% for those with fewer than 12 years of education and 48% among those with less than \$15,000 in annual household income, and
- prevalence of overweight (10-19% above ideal weight) increases, particularly among men, as income levels increase.

4. Sedentary Lifestyle

Sedentary lifestyles remain a common health risk. About 68% of the adult population reported little or no leisure-time physical activity. At least half of adults in all age groups reported sedentary behavior, and sedentary lifestyle behavior decreased with higher income and education levels.

5. Tobacco Use

West Virginia has a high cigarette use rate, about 27% in 1996, but it has been trending downward since the mid 1980s.

The survey found that:

- smoking rates decline with higher education and income levels;
- among women, those between 25-44 years of age reported higher smoking levels (32%), and
- among men, those with less than \$15,000 of annual household income reported the highest prevalence (44%).

Interestingly, women reported they were less likely than men to quit smoking.

West Virginia has ranked first or second among states in the use of smokeless tobacco since 1986. Overall reported prevalence was 8% in 1996, with an 18% prevalence for men. Among men, those between 25 and 34 years of age and those with lower education levels reported higher prevalence.

6. Alcohol Abuse

Historically, West Virginia has had a relatively low prevalence of alcohol abuse. In 1995, the state ranked 45th in heavier drinking (60 or more drinks in the previous month), 48th in binge drinking (five or more drinks on one occasion in the prior month), and 49th in drinking and driving.

III. PROBLEM STATEMENT

West Virginia, a rural, sparsely populated state located in the heart of Appalachia, confronts major health problems. The objective indicators and related measures normally used to assess individual and community health and well-being are largely negative. A review of more than 500 health-related measures (168 of which are presented and analyzed in Table AR 1) may be summarized generally:

- the population is older than that of the nation and neighboring states, and continues to age more rapidly than the nation and contiguous states;
- population growth is negative, with net outmigration of population. Prospects for a change in this pattern soon are not good;
- morbidity and death rates, including infant mortality, are higher than those nationally and than most of the rates found in neighboring states;
- income and education levels are lower than those of the nation and nearby states;
- there are some troubling indications that progress being made earlier this decade in improving health indices may have reached a plateau or may be eroding, and
- use of, and reliance upon, health care services varies widely across the state, and is particularly high for some conditions and in some communities.

Given that health care resources are limited, the goal must be to devise plans, methods, and processes to address as many of the major health problems as is practicable, using available health resources as efficiently as possible. This entails working cooperatively with, and relying upon the expertise and good will of, all interested parties, public and private, to first define the nature and magnitude of the problem(s) and to devise the means and methods of dealing with them.

Performance measurement systems and indicators of quality and accountability should address the priority at-risk populations. Taking appropriate measure over time will be useful in determining the responsiveness of providers and the health care system to identified problems.

IV. ANALYSIS

Identifying “at-risk” populations, those population subgroups at unusually high risk of encountering specific health problems, is a standard approach to trying to meet individual and community health care needs more effectively and efficiently. The most common approach is to analyze the size, nature, and composition of the population to be served and then examine carefully its historical health care profile. Special attention is paid to the incidence and prevalence of disease and disability within the population, its morbidity and mortality patterns, and its demand for and use of health care services. Knowing as much as possible about these factors is critical to developing priorities, using resources efficiently, and being responsive to the underlying needs of individuals and communities.

Benchmarking, that is, measuring incidence and prevalence of health conditions, use of services, and system performance against established norms, is used to identify community needs and profiles of use patterns. Deviance from these norms can be used to help determine where effort and resources should be concentrated, where existing resources may be wasted, and how to make progress toward changes being sought. Two sets of benchmarks have been used extensively here, those contained in the *Dartmouth Atlas of Health Care: The South Atlantic States* and those derived by comparing an array of health care indices for West Virginia with comparable data for the nation and the five states contiguous to West Virginia. Data from the latter are presented in Table AR 1. That information and data from the *Dartmouth Atlas* community profiles are used throughout this report, where appropriate.

These data, as well as those reported by the West Virginia vital statistics program, collectively show:

- the incidence and prevalence of major chronic conditions to be higher than expected throughout the state and widely varied geographically (by region and county) within the state;
- much higher-than-expected age- and sex-adjusted hospitalization rates for both medical and surgical patients generally;
- use of hospital services by Medicare patients for “high variation” medical and surgical conditions (e.g., chronic obstructive pulmonary disease, congestive heart failure, prostate surgery, gastroenteritis), coronary artery bypass surgery, coronary angioplasty, coronary angiography, back surgery, and a number of other conditions to be higher than expected, and
- wide variation in the use of these services and facilities geographically, among the 14 aggregated hospital service areas identified in the atlas.

Collectively these data span a period of more than a decade. There is little indication that these patterns are likely to change soon.

V. ACTION STEPS

Given the large percentage of the population that is 65 years of age or older (>15%) and the continued aging of the population, the high death rate, and the comparatively high prevalence of a number of debilitating diseases, steps need to be taken to ensure that the health care delivery system has an appropriate array of services available to meet the growing need for acute, chronic, and end-of-life health care services. The state already has comparatively large numbers of hospital, long-term nursing care (nursing home), and personal care beds. These resources need to be woven into a better-coordinated, more efficient service network if the growing need for chronic care services is to be met in a reasonably cost-effective manner.

Some of the changes that need to be made are already under way. As has been the case nationally for some time, inpatient acute care hospital use is in decline and overall occupancies are low, particularly among small rural hospitals. Based on experience in nearby states, this trend is likely to continue, particularly if ways are found to increase levels of managed care in rural areas. Although there has been a moratorium on the development of additional long-term nursing facility bed capacity for more than a decade, exceptions are made under certain circumstances for the conversion of excess acute care beds to Medicare certified skilled nursing care beds. Although these beds are for Medicare skilled nursing care patients only, this exception has permitted the effective number of nursing care beds to expand. There are now more than a thousand such beds statewide. Their presence has added considerably to the average daily census of community hospitals, particularly small rural hospitals.

A number of hospitals are also expanding the coordinated continuum of care by operating licensed personal care beds as “distinct part” units, assisted living facilities, retirement centers, adult day care centers, and other long-term care related services. Most of these developments are positive responses to genuine community need and should be encouraged through the planning and regulatory processes. Such end-of-life services as inpatient and outpatient hospice services should also be encouraged where practical, particularly in those communities with high cancer, pulmonary disease, and congestive heart failure morbidity and mortality.

VI. POTENTIAL SOLUTIONS

Policymakers and planners should consider selecting several (perhaps a half dozen or so) high risk populations on which to focus, and thereby guide and discipline the planning process. Given the composition, distribution, and recent health history of the state population, likely areas of focus might logically include the following:

- teenage and young women at risk of becoming pregnant;
- tobacco users of all types;
- the obese;
- persons with or at risk of developing diabetes;
- persons with or at risk of developing chronic obstructive pulmonary disease;
- motor vehicle and other unintentional injury, and
- small geographic areas (towns, counties, etc.) with morbidity and mortality patterns that exceed the national and state expected level by 25%.

This multifaceted approach would serve to focus energies and resources on areas where they might prove more beneficial, would be likely to have overlapping, mutually reinforcing effects, and could be monitored closely, permitting adjustment based on observed results.

Developing an integrated statewide health information system, as discussed and suggested elsewhere, will provide valuable information for assessing demand, allocating resources, promoting access, fixing responsibility and accountability, and ensuring quality. Analyses should highlight the selected at-risk population.

VII. RECOMMENDATIONS

Everyone has an interest in helping to determine which population subgroups will be judged to be “at-risk” because this implies that these groups are likely to receive special attention and extra resources. So, all interested parties -- providers of care, policymakers, voluntary service groups and civic organizations, and the citizenry generally -- and should be invited to participate in order to gain from their knowledge, experience, and practical sense of what is feasible and workable locally. Their role should be both substantive and advisory. Their involvement is likely to be most productive if they are involved early, as soon as necessary preliminary planning efforts are under way.

Those managing the planning process could generate a list of potential at-risk groups, with an explanation of the rationale for their initial selection, as a starting point from which all interested parties would work. This list could be prepared from a detailed analysis of the health measures delineated in Table AR 1, combined and cross-referenced with the goals and objectives established in *Healthy People 2000: West Virginia Objectives* and the measures delineated in the sections of the *Dartmouth Health Atlas of Health Care* that pertain to West Virginia.

There is good reason to believe that all stakeholders would be willing devote their time and energy to such a collaborative effort, particularly once it is understood that the stakes in community and individual health are so high.

VIII. FEASIBILITY

Identification of the array of potential high-risk populations is more or less complete. Selection of those worthy of special attention, though somewhat difficult and to some degree subjective, would be a valuable educational and community-building experience. If undertaken openly and cooperatively, the process itself should prove highly beneficial, conducive to the ultimate success of decreasing risk among those in the populations chosen for special attention.

Selection of risk indicators, and of the populations that are at increased risk, can be used to build community support for the planning process and for making the difficult decisions that will have to be made later in allocating resources.

IX. ACCOUNTABILITY

Accountability as used here would mean that all interested parties acknowledge that it is both reasonable and desirable that high-risk populations be identified and that special efforts need to be made reduce those risks.

Accountability will be maximized if all stakeholders are invited to participate in the planning and decision-making process from the early stages. Those involved will be more likely to feel a strong commitment to making the process work and to ensuring that tangible gains are made.

X. ISSUES FOR THE FUTURE

Depending on the action steps finally adopted to try to reduce health risks among high risk groups, a number of additional studies and analyzes may need to be performed. Examples include:

- detailed analyses of age-specific morbidity and mortality correlated with geographic-specific health service demand and use patterns over last decade;

- linked (cross-referenced) hospital and nursing patient origin and destination analyses by age and condition (DRG) for the most recent three year for which data are available (see Maps AC 24-27), and
- market-share analyses of high-variation hospital use patterns modeled after those in the *Dartmouth Atlas of Health Care*.

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