
THE POOR HEALTH STATUS of Russia's economically active adult population—its human capital—challenges sustainable economic growth and social development. President Vladimir Putin, in his annual address to the Federal Assembly of the Russian Federation in May 2004 and more recently in the State-of-the-Nation Address on April 25, 2005, criticized the failure of health care reform to produce significant results, as evidenced by Russia's lagging behind many countries in key health indicators. Life expectancy in Russia at 66 years, he noted, is 12 years less than it is in the United States, 8 years less than in Poland, and 5 years less than in China—a situation President Putin attributed to “the high death rate in the working-age population.”

Dying Too Young aims to heighten understanding of the nature and characteristics of non communicable diseases and injuries as the leading killers in the Russian Federation, its associated risk factors, and their social and economic implications. The study outlines specific options and offers recommendations for addressing this problem, and projects the health and economic gains that could result from a comprehensive program of action. Improving adult health would contribute to improved health status of the population, quality of life, labor productivity and sustainable economic growth in the country.

DYING TOO YOUNG

*Addressing Premature Mortality and
Ill Health Due to Non-Communicable Diseases
and Injuries in the Russian Federation*

SUMMARY



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Marc Suhrcke and Lorenzo Rocco, World Health Organization (WHO) European Office for Investment for Health and Development, Venice; Martin McKee and Dave Leon, London School of Hygiene and Tropical Medicine; Jill Farrington and Anatolyi Nosikov, WHO Office for Europe, Copenhagen; Tiina Laatikainen, National Public Health Institute of Finland; Kirill Danishevski, Moscow Medical Academy; and from members of the World Bank Russia Health Team: Anne Margreth Bakilana, Tatyana Loginova, Willy De Geyndt, Edward Frid, John C. Langenbrunner, Ginny Hsieh and Alberto Gónima.

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The summary was prepared by Patricio V. Marquez with editorial support from Merrell J. Tuck-Primdahl and Christina Anna Lakatos, ECA External Affairs, The World Bank.

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DYING TOO YOUNG

Addressing Premature Mortality and Ill Health Due to Non-Communicable Diseases and Injuries in the Russian Federation (2005)

SUMMARY

I am deeply convinced that the success of our policy in all spheres of life is closely linked to the solution of our most acute demographic problems. We cannot reconcile ourselves to the fact that the life expectancy of Russian women is nearly 10 years and of men nearly 16 years shorter than in Western Europe. Many of the current mortality factors can be remedied, and without particular expense. In Russia nearly 100 people a day die in road accidents. The reasons are well known. And we should implement a whole range of measures to overcome this dreadful situation.

I would like to dwell on another subject which is difficult for our society—the consequences of alcoholism and drug addiction. Every year in Russia, about 40,000 people die from alcohol poisoning alone, caused first of all by alcohol substitutes. Mainly they are young men, breadwinners. However, this problem cannot be resolved through prohibition. Our work must result in the young generation recognizing the need for a healthy lifestyle and physical exercise. Each young person must realize that a healthy lifestyle means success, his or her personal success.

PRESIDENT VLADIMIR PUTIN
State-of-the-Nation Address
Federal Assembly of the Russian Federation,
The Kremlin, April 25, 2005

INTRODUCTION

The poor health status of Russia's economically active adult population—its human capital—is imperiling sustainable economic and social development. What factors contribute to the excessive mortality, ill health, and disability in Russia, particularly among working-age adults? What are the demographic, social, and economic consequences of this phenomenon? Most importantly, what can be done to reduce these burdens?

Dying Too Young: Addressing Premature Mortality and Ill Health Due to Non-Communicable Diseases and Injuries in the Russian Federation (2005) shows that non-communicable diseases (NCDs) and injuries are the leading causes of death, illness, and disability in Russia. This report assesses the factors associated with the onset of these conditions, as well as the demographic, financial and economic consequences of NCDs and injuries, summarizes relevant evidence and emerging lessons from international experience, proposes a comprehensive program for addressing this problem, and projects the health and economic gains that could result from such a program.

It is clear that the understanding of the Russian situation cannot be based entirely on current information from Russia and research results from western countries. This means that the understanding of the Russian situation outlined in this report is indeed provisional and that further research is essential to be able to get more definitive estimates of its causal factors. But in a world where there is a need to act without perfect data, it should be seen as a start.

I. THE DEMOGRAPHIC DECLINE AND THE HEALTH DEFICIT

How do Russia's demographic decline and ill health burden compare internationally?

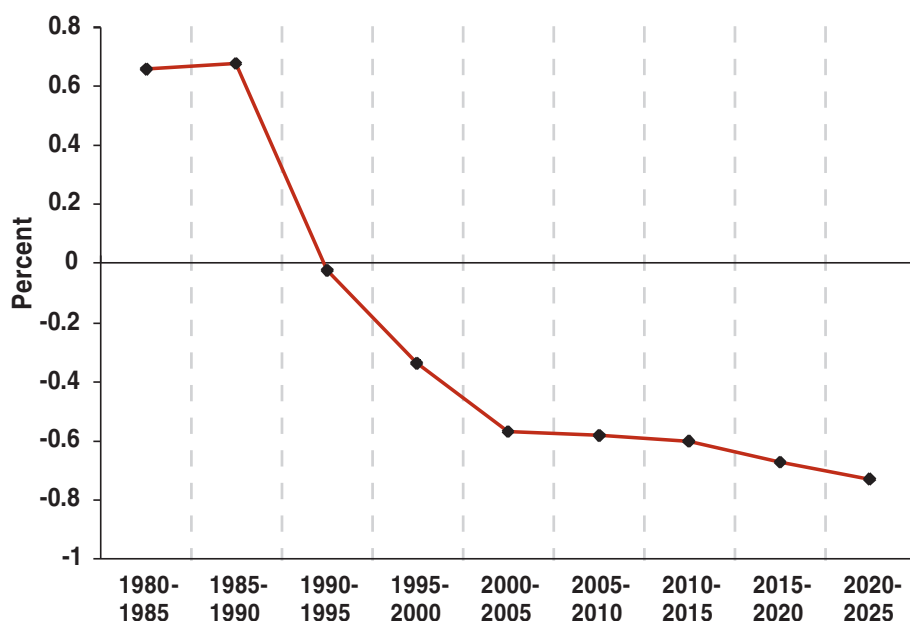
Russia is suffering a prolonged and debilitating demographic decline fueled by low fertility and high mortality. Some observers note that this demographic “devastation” is unprecedented among industrialized nations. The decrease in fertility and increase in mortality since the 1960s were exacerbated in the 1990s by the turbulent political and economic transition and an ensuing decline in the population’s well being. In recent years, prosperity has increased due to rapid economic growth, but demographic and health trends remain worrisome—even alarming.

The current situation in Russia clearly exemplifies a reversal of the epidemiological transition as the economic stress of the past 15 years and a prolonged period of highly unhealthy lifestyles and environments not only halted progress in improving health status, but shortened life expectancy, particularly among working-age males. This situation defines a new pattern of the epidemiological transition that deviates from the experience in a number of western countries that is characterized by a reduction of age-specific NCDs rates and increasing life expectancy (Omran 1971 and 1999, Murray and Bobadilla 1997; Kingkade and Arriagada 1997).

The shrinking of the population

Russia’s population was 149 million people in 1992; it declined by 6 million as of 2003 to an estimated 143 million. If current trends persist, the country’s population is expected to decline by over 30 percent during the next 50 years, as all measures of demographic processes show that Russia will undergo further dramatic changes in its population dynamics. The average annual population growth during 1990-2003 was -0.3 percent, and continued high mortality and declines in fertility are expected to lead to further negative population growth (Figure 1). It is estimated that the population of Russia would be 17 million higher than at present if age-specific mortality rates in Russia had followed the patterns experienced by the European Union-15 countries (EU-15) since the mid-1960s (Andreev 2005).

Figure 1. Estimated Population Growth Rates, Russia, 1980-85 to 2020-25



Source: UN Population Database.

Declining fertility

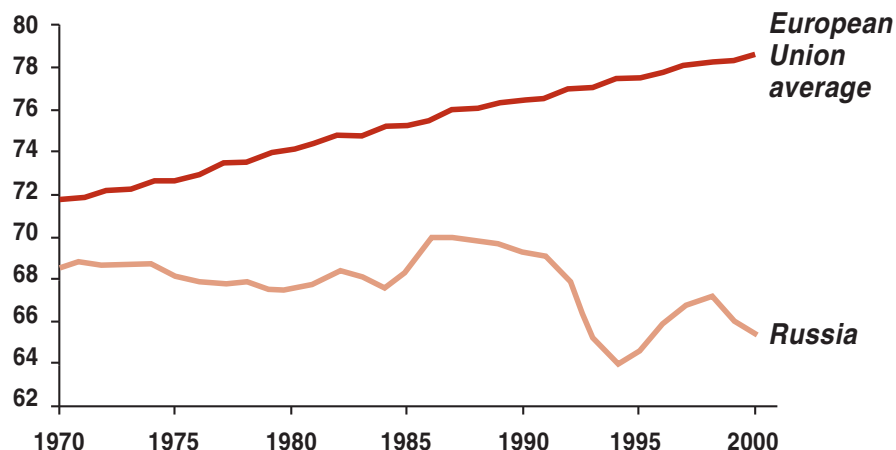
Russia is among many countries with total fertility rates below the replacement level of 2.1 children per woman of reproductive age. In the early 1960s, Russia’s total fertility rate stood at approximately 2.6. The fertility rate dropped to about 2.2 in the late 1980s, fell below replacement in the early 1990s, and in 2000-2005, it was 1.1. Projections suggest that Russia’s total fertility rate will remain below replacement beyond 2025.

Low life expectancy due to high adult mortality

Analysts have described the country's mortality profile as the most puzzling aspect of the Russian transition. Poor data quality has been ruled out as an explanatory variable because demographic data are considered reliable: Russia's registration of vital events is nearly complete and its coding of broad categories of death is reasonably accurate (Leon et al. 1997, Shkolnikov et al. 1997, 2001).

Russia is one of the few countries in the world where life expectancy is falling. However, the situation in Russia has specific features that distinguish it from other countries, such as several in sub-Saharan Africa, where a generalized HIV/AIDS epidemic is driving losses in life expectancy. Both the current low level of life expectancy and the recent declines were driven largely by increasing mortality among those of working age, with a singular rise in mortality at young adult ages, with the greatest contribution from cardiovascular diseases and injuries (Mesle 2002).

Figure 2. Life Expectancy at Birth, Russia and the European Union, 1970-2000



Source: WHO European Health for All Database.

By the early 1960s life expectancy in the former Soviet Union had nearly reached that of the United States, but death rates increased significantly, particularly at adult ages, during the 1965-85 period. By 1980, the difference in life expectancy was nearly 8 years. As shown in Figure 2, the post-1984 period was marked by wide swings in life expectancy. A reduction in mortality

occurred during the Gorbachev anti-alcohol campaign (1985-87), but as the effects of the campaign dwindled, a dramatic deterioration ensued (1990-94) as the country entered a severe crisis associated with the sudden transition to a market economy (Shkolnikov et al. 1997, Shkolnikov and Nemtsov. 1997, Shkolnikov et al. 2001, Mesle 2002). Life expectancy improved by three years between 1995 and 1998, but the gains eroded following the 1998 financial crisis, and male life expectancy fell to the current level of 58 years. Total life expectancy at birth in Russia at 66 years lags behind that of Japan by as much as 16 years and the European Union average by 14 years.

The scale of Russia's demographic challenge is apparent in Table 1. It shows that the probability that a 15-

Table 1. Life Expectancy and Adult Mortality in Selected Countries, 2000-2001

Country	Life expectancy at birth (2001)	Probability of dying between ages 15 and 60 (2000-2001, % males)	Probability of dying between ages 15 and 60 (2000-2001, % females)
Russian Federation	66	42.4	15.3
Japan	81	9.8	4.4
France	79	13.7	5.7
United States	78	14.1	8.2
Germany	78	12.6	6.0
United Kingdom	77	10.9	6.6
Denmark	77	12.9	8.1
Mexico	73	18.0	10.1
Poland	70	22.8	8.8
Turkey	70	21.8	12.0
Brazil	68	25.9	13.6
Kyrgyz Republic	66	33.5	29.9

Source: World Bank World Development Indicators.

year-old Russian boy will die before he reaches 60 years is over 40 percent, about 16 percentage points higher than in Brazil and double that of Turkey.

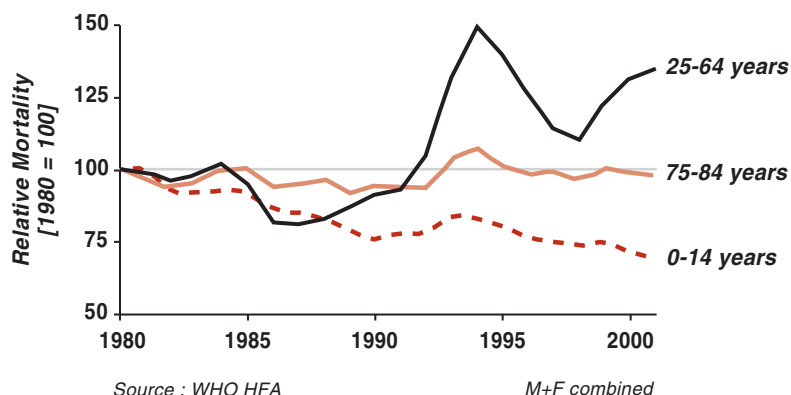
The trends shown in Figure 3 clearly underline that it is mortality among the working-age group that has played a key role in reducing life expectancy in Russia, while the contribution of younger age groups to overall mortality has dropped.

Life expectancy and economic development

A major determinant of a population's health is its country's level of economic development, which may in part explain some of the differences in mortality rates observed in Table 1. However, as Figure 4, shows, even when income differences are taken into account, Russian male adult mortality rates are still substantially higher than those of countries with similar per capita incomes.

Ill-health and disability: Russian adults suffer not only from lower life expectancy but also from lower *healthy* life expectancy. As shown in Figure 5, the healthy life expectancy indicator (HALE)¹ of males and

Figure 3. Mortality among Working-Age Population in Russia Drives Fluctuations in Life Expectancy

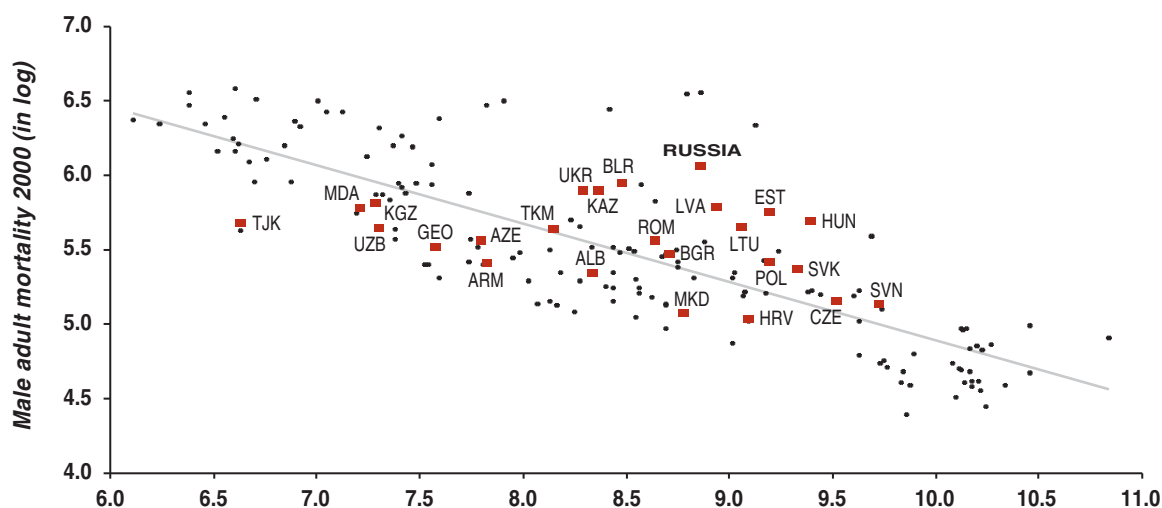


Source: WHO Health for All Database.

females is much lower in Russia than in other G-8 countries. A healthy middle-aged cohort in Russia would have less than a third the chance than one in Sweden to survive into old age without disability (Bobak et al. 2004).

¹ HALE is a summary measures that captures the full health experience of a population to include mortality, morbidity, and adjustments for severity of illnesses. It is usually expressed as years of life spent in full health.

Figure 4. Male Adult Mortality and Gross National Income per Capita in Selected Countries, 2000



Source: World Bank World Development Indicators.

Gender disparities: Russian women live approximately 14 years longer than Russian men. The longevity gap is significantly wider than in other G-8 countries, where the gender gap ranges between 5 and 7 years. The large difference by sex in Russia suggests that specific behavioral factors are implicated, rather than factors related to the external environment or adequacy of health care, which affect men and women to somewhat similar degrees. Two major factors behind this big gender gap are smoking and alcohol consumption, as these behaviors are very different between men and women—even those living in the same households. Although Russian women outlive Russian men, they are generally in worse health than women in Eastern and Western Europe (Andreev, McKee, and Shkolnikov 2003).

Regional variations: Mortality rates and life expectancy in Russia vary greatly by region, in part because of regional differences in socioeconomic and health levels. The mortality rate of the economically active male population from region to region ranges from 3.8 deaths per 100,000 people to 17.8 (Table 2).

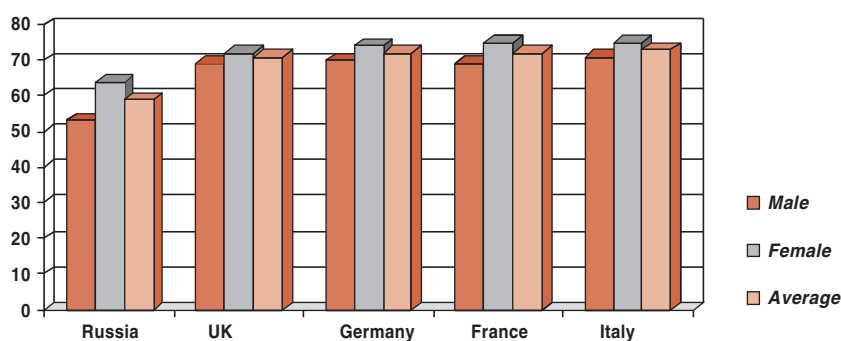
Data for 2001 show that people in regions such as the Republics of Ingushetia and Dagestan, and Moscow have the longest life expectancy and live 18 years longer than those in low income regions such as Republic of Tyva, Koryak Autonomous Okrug, and Komi-Perm Autonomous Okrug.

The Russian population is also aging

As shown in Figure 6 on page 8, Russia's population structure is also characterized by a shrinking youth base and an expanding proportion of the population aged 60 and over. Two factors contribute to this: (a) continued very low levels of fertility and (2) past higher fertility levels that produce comparatively larger cohorts.

Two decades ago, youth aged 0-14 years constituted about one quarter of Russia's population, and those aged 60 years and

Figure 5. Healthy Life Expectancy (HALE) at Birth in Russia and Four European Countries, 2002



Source: WHO Health For All Database.

above made up 14 percent of the total. Now, those aged 0-14 have dropped to 18 percent. Projections suggest that given Russia's expected total fertility rates of between 1.1 and 1.3 children per woman of reproductive age for the years 2005-25, persons aged 0-14 will remain at about 13 percent, and population growth rates will remain negative, averaging between -0.6 and -0.8. As a result, the proportion of persons aged 60 and over will increase to more than one quarter of the Russian population. Unlike other G-8 countries, the rapid aging of the Russian population and growing dependency ratio are occurring at a lower level of GDP per capita (Eberstadt 2005).

Table 2. Regional Variation in Mortality Rates for the Economically Active Population, 2000

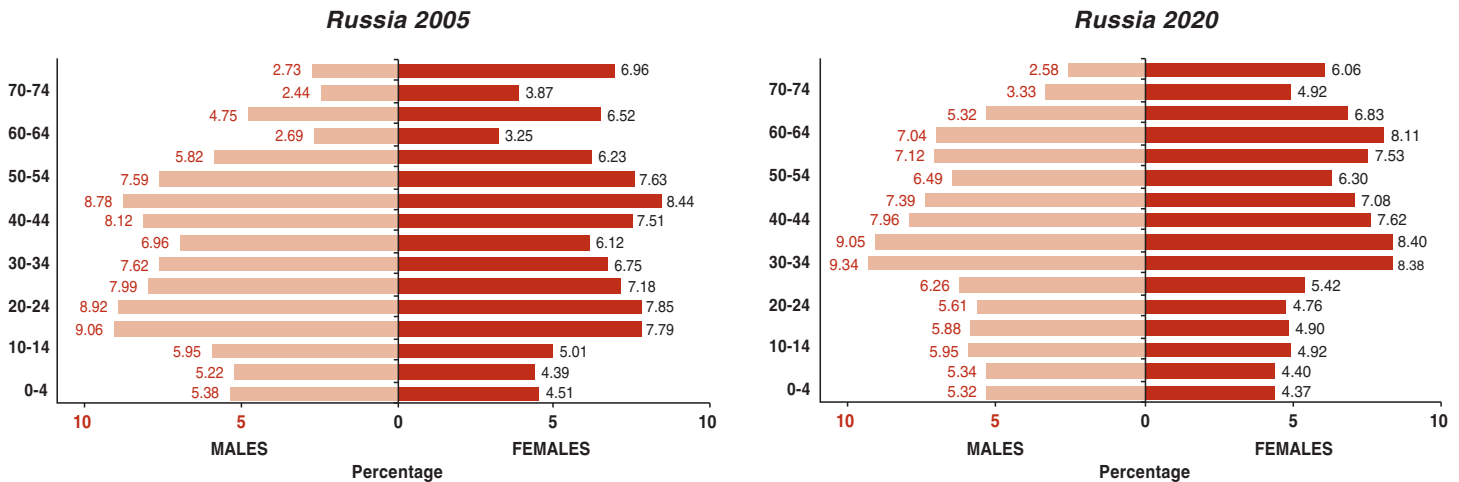
Deaths per 100,000 population

	MORTALITY RATES	
	Men*	Women*
Russian Federation's mortality rate	11.5	3.0
Region with the highest mortality rate	17.8	7.2
Region with the lowest mortality rate	3.8	1.3
Median mortality rate	11.4	2.9

Source: Goskomstat, 2000.

*NOTE: Men aged 16 to 59; women aged 16 to 54.

Figure 6. The Russian Population Structure, 2005 and 2020



Source: United Nations Population Database.

II. DETERMINANTS OF THE DEMOGRAPHIC DECLINE AND THE HEALTH DEFICIT

Non-communicable diseases and injuries are the leading causes of death and ill health in Russia

Table 3 shows that non-communicable diseases (NCDs) and injuries are the ten leading causes of death in Russia, accounting for 70 percent of deaths in the total population. In 2003, cardiovascular diseases, cancer, and injuries accounted for 78 percent of deaths and 15.2 million lost years of potential life among the working-age population (10.3 million among men and 4.9 million among women) (Oganov and Maslennikova 2005).

NCDs and injuries also cause much of the morbidity and disability among the Russian population. Disability-adjusted life years (DALYs) is another measure that captures mortality, morbidity, and the severity of disability.² The NCDs and injuries that are included in the 10 leading individual causes of death and ill-health account for about 50 percent of DALYs lost from all causes in the total population (Table 3), as compared to 40 percent of DALYs lost for the European region as a whole.

As shown in Table 4, the mortality rates from NCDs and injuries in Russia are dramatically higher than those

in the European Union countries: about 3 and 5 times, respectively.

Cardiovascular disease: Russia's cardiovascular disease (CVD) death rate per 100,000 population in 2002 was 994—one of the world's highest. The comparable rates were 317 in the United States, 363 in Portugal, and 225 in Brazil (WHO Global Infobase Online, 2005). CVD accounts for almost 52 percent of deaths in Russia, compared to 38 percent in the United States, 42 percent in Portugal, and 32 percent in Brazil. Russia's high mortality among working-age men is mainly attributable to CVD. Such statistics led a 2004 World Bank report to conclude that Russia could gain 6.7 years in life expectancy by working to match the European Union's CVD mortality rates (World Bank 2004a, p.29).

Cancers: Cancer mortality rates in Russia are significantly above the average of the EU-15 countries. In addition, cancer in Russia is characterized by its

² DALYs lost to mortality are the total discounted value of years lost to premature death across all causes and age groups. DALYs lost due to disability are based on the incidence and duration of various types of disability multiplied by a severity weight that accounts for the severity of the disability compared to loss of life. Total DALYs result from the sum of DALYs lost to mortality and disability, adjusted by a discount rate so that future years of healthy life are valued at progressively lower levels and by age group weightings so that years of life lost at different ages are given different relative values.

Table 3. Deaths and DALYs Lost Attributable to the 10 Leading Diseases and Injuries in Russia, 2002

Rank	Cause	Total deaths	Total %	Rank	Cause	Total DALYs lost	Total %
1	Ischemic heart disease	711,571	29.6%	1	Ischemic heart disease	5,472,308	13.9%
2	Cerebrovascular disease	533,675	22.2%	2	Cerebrovascular disease	3,930,367	10.0%
3	Poisonings	66,930	2.8%	3	Unipolar depressive disorders	1,574,695	4.0%
4	Self-inflicted injuries	59,015	2.5%	4	Violence	1,459,927	3.7%
5	Trachea, bronchus, lung cancers	58,899	2.4%	5	Self-inflicted injuries	1,297,152	3.3%
6	Violence	47,461	2.0%	6	Road traffic accidents	1,292,752	3.3%
7	Road traffic accidents	44,580	1.9%	7	Poisonings	1,272,366	3.2%
8	Stomach cancer	44,557	1.9%	8	Alcohol use disorders	1,258,936	3.2%
9	Colon and rectal cancers	38,141	1.6%	9	Hearing loss, adult onset	765,988	1.9%
10	Cirrhosis of the liver	37,426	1.6%	10	Tuberculosis	700,997	1.8%
-	All causes	2,405,721	100.0%	-	All causes	39,409,946	100.0%

Source: WHO/EURO Health Database.

Table 4. Cause-Specific Adult Mortality Rates, Age 15-64

Deaths per 100,000 population

	Russia	EU-15	Russia's death rates as % of EU-15
NCDs	605	206	294%
Injuries	281	58	484%

Source: WHO Mortality Database.

NOTES: Russian rates refer to 2002; EU-15 rates to 2001 or latest available. The EU-15 average is population weighted.

extremely high lethality, with a high proportion of deaths within a year of first diagnosis of the disease (e.g., 56 percent for lung cancer and 55 percent for stomach cancer). Men in Russia die from cancer twice as often as women, but the cancer incidence rate among women is higher.

Traffic injuries: Traffic injuries include crashes involving motor vehicles, pedestrians, or cyclists. At 20.6 deaths per 100,000 population, Russia's mortality rates due to traffic injuries compare unfavorably with other G-8 countries at 11. This nearly double rate is even more remarkable considering that there are fewer automobiles

per capita in Russia than in Western Europe. Russia's traffic mortality rate is also higher than that of other former Soviet states. In 2004, more than 34,000 people in Russia died in road accidents; most of the deaths occurred among males of prime working age.

Suicide: Russia's suicide rate is much higher than that of other European Union countries. The Russian suicide rate peaked in the mid-1990s, particularly among middle-aged men. By 1994 the suicide rate for Russian men aged 50-54 was over six times that in the United States. It then fell slightly between 1995 and 2002. Among all the Central and Eastern Europe (CEE) and the Commonwealth of Independent States (CIS), Russian males aged 15-19 had the second highest suicide rate at 38.2 per 100,000 relevant population, barely surpassed by Lithuania at 38.4.

Alcohol poisoning: A primary external cause is alcohol poisoning; death occurs when, for example, a healthy adult male of average weight consumes a half liter or more of a strong beverage (40 percent alcohol) without food in less than one hour. This is a particularly acute and rapidly growing problem in rural areas, where the death rate is 128 per 100,000 among adult men. This death rate is twice as high as the rate for the country as a whole.

Violence: The homicide rate in Russia increased rapidly during the 1990s. In 1999, close to 30,000 persons died from homicide in Russia. It is now among the highest recorded anywhere in the world. As the average age of homicide victims is much lower than for most other causes of death, it has a very negative impact on the number of years lost. Alcoholism is closely related to crime; the proportion of crimes committed by men and women while intoxicated in 2002 was about 30 percent and 12 percent, respectively. In a majority of cases, victims of homicide are also often intoxicated at the time of the crime (Chervyakov et al. 2002). After 1998, with increased alcohol consumption among young cohorts, violent deaths began to rise (Shkolnikov and Nemtsov 1997, Mesle 2002). Increased levels of violence add to the increasing mortality burden as well as adversely affect social and economic development.

The preventable risk factors for NCDs and injuries

Though risk factors may not cause disease, their presence increases the probability that one will develop. The mortality attributable to 10 leading risk factors in Russia in 2002 is shown in Table 5. The first three—high blood pressure, high cholesterol, and tobacco—are estimated to contribute to more than 75 percent of the country's deaths. The table also shows the DALYs attrib-

utable to the same risk factors, with the top three accounting for more than 46 percent of DALYs lost in 2002. However, in terms of ill health burden, alcohol abuse tops the list in Russia, accounting for 16.5 percent of DALYs lost.

Alcohol abuse: Alcohol abuse (heavy or binge drinking) is a major public health problem in Russia. Adult per capita alcohol consumption in 1999 was 10.7 liters per adult in Russia versus 8.6 liters in the United States and 9.7 liters in the United Kingdom. Although these consumption levels are not dissimilar, the key difference is that 75 percent of the alcohol consumed in Russia is spirits, whereas in the United Kingdom and the United States, 56 and 60 percent, respectively, is beer. Recent data from the Russian Longitudinal Monitoring Survey (RLMS) indicate that in 2002, alcohol consumption for all groups increased: 14.5, 2.4, and 1.1 liters per year among men, women, and teenagers, respectively (RLMS 2005). In 2004, about 70 percent of men, 47 percent of women, and about 30 percent of teenagers were drinkers. In rural areas, Russians drink more alcohol of poorer quality than people in cities, as demonstrated by a long-standing tendency of higher morbidity due to alcohol poisoning among rural populations.

In an ongoing case-control study in Izhevsk (a city in the Urals), an interim analysis shows that, of 1,400

Table 5. Deaths and DALYs Lost Attributable to 10 Leading Risk Factors in Russia, 2002

Rank	Risk factor	Total Deaths %	Rank	Risk factor	Total DALYs %
1	High blood pressure	35.5	1	Alcohol	16.5
2	High cholesterol	23.0	2	High blood pressure	16.3
3	Tobacco	17.1	3	Tobacco	13.4
4	Low fruit and vegetable intake	12.9	4	High cholesterol	12.3
5	High BMI	12.5	5	High BMI	8.5
6	Alcohol	11.9	6	Low fruit and vegetable intake	7.0
7	Physical inactivity	9.0	7	Physical inactivity	4.6
8	Urban outdoor air pollution	1.2	8	Illicit drugs	2.2
9	Lead	1.2	9	Lead	1.1
10	Illicit drugs	0.9	10	Unsafe sex	1.0

Source: WHO/EURO Health Database.

deaths from all causes occurring among all male residents aged 25-54 years in 2003-2004, 18 percent were certified by a medical expert as alcohol-related: mental disorders due to alcohol; alcoholic cardiomyopathy; alcoholic cirrhosis of the liver; and acute alcohol poisoning (Leon et al. 2005). However, this excludes the substantial proportion of deaths that are attributable to alcohol, but arise from causes that do not explicitly imply alcohol, such as injuries, violence, and a wide range of illnesses. This risk factor may explain the mortality crisis in Russia more than any other.

Tobacco consumption: Tobacco is the only consumer product that eventually kills half of its regular users if they follow its manufacturers' recommendation (Beaglehole and Yach 2003). Associated with higher rates of CVD, many cancers, and chronic lung diseases, cigarette smoking is the single most preventable cause of disease and death in Russia. Russia has one of the world's highest rates of smoking among men. More Russian men smoke than European men—the ratio is between 2 to 1.19. In 1998, 6 out of 10 male adults in Russia were smokers—more than twice the comparable rate in the United States and the United Kingdom. Recent data from the RLMS indicate that while smoking prevalence among men decreased from about 65 percent in 2002 to 61 percent in 2004, the prevalence of smoking among women continued to increase from 7.3 percent in 1992 to 15 percent in 2004. Lower smoking prevalence among older men reflects trends over time and higher death rates among long-term smokers as they age (McKee et al. 1998).

Drug Use: Over the past 10 years, illegal drug use has increased rapidly in Russia. At the beginning of 2005, drug users were estimated to number 500,000, including more than 340,000 drug addicts in the lists maintained by public institutions. The number of persons registered in medical and prevention institutions with a diagnosis of drug abuse increased by a factor of 2.1. However, it is estimated that the actual number of drug abusers in the country exceeds those officially registered by five to eight times (Cherkesov 2005). Injecting drug users are estimated to have 20-times higher risk of death than the general population, making it conceivable that a portion of Russian teenage mortality is connected to substance abuse (UNICEF 2004). Injecting drug use is also the driving force behind the HIV/AIDS epidemic in Russia.

(Although HIV/AIDS is an infectious disease that shares certain characteristics with many NCDs, such as a long latency period, and affects predominantly young adults, it is not considered in this assessment. For additional information see World Bank 2003b.)

Nutrition- and activity-related factors

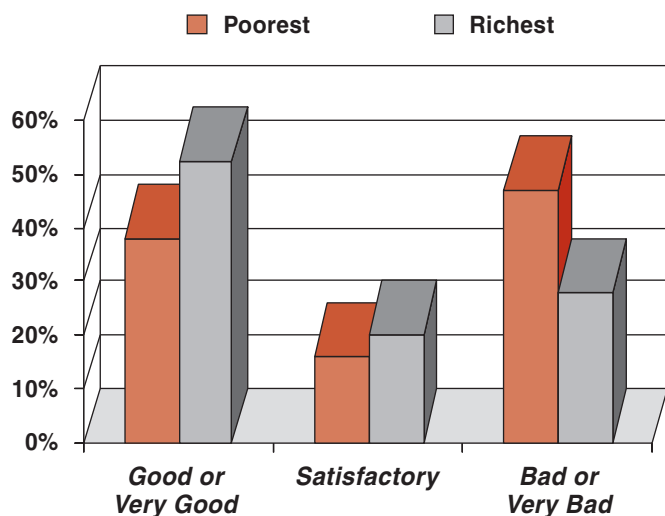
Dietary intake, cholesterol, obesity, and hypertension should not be seen as separate, individual risk factors. In fact, they are a matter of diet: high saturated fat (animal fat, hydrogenated vegetable fats) intake, high salt intake, low vegetable and fruit intake, and low intake of good (vegetable and fish) oils. These aspects of diet are the determinants of high blood cholesterol, high body weight, and high blood pressure among Russians. WHO estimates that about a third of all CVD is due to poor diets and that better diets could lower cancer cases by about 30-40 percent. It has been suggested that the decline in fruit and vegetable consumption in Russia can explain 28 percent of the increase in CVD mortality (Brainerd and Cutler 2004). Sedentary lifestyle aggravates the problem, as moderate, regular exercise improves both physical and mental well being and reduces the risks of CVD, colon cancer, diabetes, and hypertension. A 2002 survey reports that 73 to 81 percent of adult men and 73 to 86 percent of adult women reported having low levels of physical activity in Russia.

High cholesterol: About 60 percent of Russian adults have higher than recommended cholesterol levels, and about 20 percent are at high risk and in need of medical attention (MOH 1997). A study in St. Petersburg showed a significant decline in HDL (so-called good) cholesterol to dangerously low levels across all men in the 20 to 69 age group, as well as for women (Plavinski et al. 1999).

Obesity. Adults who are overweight or obese are at risk for premature death and disability. Those with a body mass index (BMI) of 25 to 29.9 are considered overweight, while those with a BMI of 30 or more are considered obese.³ Fontaine et al. (2003) reported that obe-

³ BMI, a common measure expressing the ratio of weight to height, is determined by a mathematical formula in which a person's body weight in kilograms is divided by the square of his or its height in meters (i.e., $wt/[ht]^2$).

Figure 7. Russians' self-reported health status, by consumption quintile, 2003



Source: NOBUS Survey, 2003.

sity has a substantial effect on longevity, reducing the length of life of people who are severely obese by an estimated 5 to 20 years. The latest (2002) Russian Behavioral Risk Factor Surveillance System results indicate that the prevalence of overweight adults aged 25-64 in various regions of Russia ranges from 47 to 54 percent for men and from 42 to 60 percent for women (CINDI 2004). RLMS data from 2000 found 33 percent of men overweight and 30 percent for women and that only 12 percent of men and 28.5 percent of women were obese (Brainerd and Cutler 2004). However, self-reported data are often underestimated, especially the female obesity rates. According to data from Pitkäranta, Karelia Republic, in the 1990s and 2000, about 35 percent of women had BMI (measured) equaling or more than 30 (Laatikainen 2000).

High blood pressure: High blood pressure, or hypertension, is a leading cause of death in Russia and the third-highest cause of morbidity as reflected by DALYs. Individuals with uncontrolled hypertension have a three to four times greater risk of developing coronary heart disease and a sevenfold risk of having a coronary event than those with normal blood pressure. About 34 to 46 percent of males and 32 to 46 percent of females in Russia suffer from hypertension. These figures, however, may underestimate the problem as they are based on

self-reported data. According to data from Pitkäranta, Karelia Republic, more than 40 percent of males and 25 percent of females were not aware of their hypertension. This lack of awareness clearly affects the self-reported figure on hypertension prevalence (Laatikainen 2000).

Diabetes: Complications from diabetes include blindness, renal insufficiency, and cardiovascular and neurological problems. While the incidence of diabetes in Russia is on par with the world average of 2.5 percent, this disease may be underdiagnosed there, with a majority of illnesses being registered under other, attendant diseases. WHO considers Russia among the top 10 countries in number of diabetes sufferers.

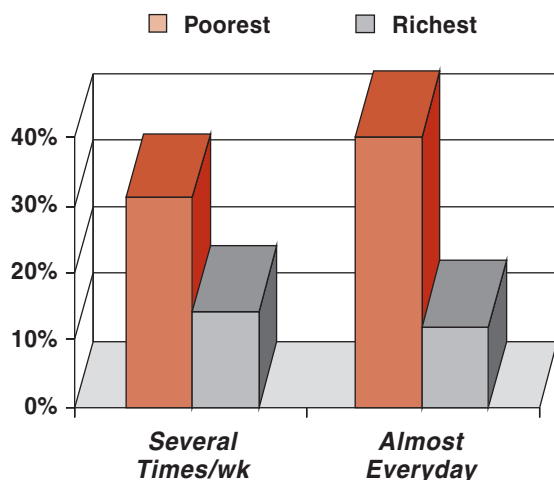
Other risk factors

Psychosocial stress: Increasing psychosocial problems in Russia were brought on by the drastic changes in the economic transition and reduction in the social safety net in the last 15 years. Stress, manifesting as depression and anxiety, can lead to incapacity, suicide, and other violence-related injuries, as well as the development of CVD and increases in CVD mortality.

Socioeconomic disadvantage: Low socioeconomic status has been shown to affect health outcomes in the West. In Russia, two studies and the 2003 NOBUS survey found that people of lower socioeconomic status have higher mortality and are more likely to report bad health than people of higher status (Plavinski et al. 2003; Ivashchenko 2003; NOBUS survey 2003 (Figure 7). People in the poorest consumption quintile (i.e., those with the lowest socioeconomic status) are more likely to report frequent consumption of hard alcohol (Figure 8) and have greater problems accessing health care systems and following treatment regimens than richer people.

Road safety-related risk factors: A major risk factor is the lack of strict road safety measures similar to those in Europe and the United States, where improved road quality, better driver training, traffic rules, vehicle safety inspection, and road safety campaigns are common. Other risk factors are drivers' and pedestrians' widespread failure to observe safety rules, speeding, and drivers' widespread failure to wear seat belts (NOBUS 2003). The rates of alcohol abuse make alcohol impair-

Figure 8. Russians' self-reported use of hard alcohol, by consumption quintile, 2003



Source: NOBUS Survey, 2003.

ment an important risk factor in crashes. Inadequate post-crash emergency medical care is also a major risk factor in some Russian regions.

Work-related risk factors: Occupational risk factors include exposure to hazardous substances and lack of safety measures. The International Labor Organization (ILO) estimates that about 6,000 fatal accidents, 118,000 disease cases, and 131,000 deaths in 2001 in Russia were work related (ILO 2005).

Interactions among risk factors: The relative risk of developing NCDs and suffering injuries increases sharply when various risk factors are combined. Multiple factors increase the risk of CVD mortality by 5-7 times (MOH 1997).

While there clearly are many open questions on the current health crisis in Russian, and there is much to be studied, the policy implications are clear: without a doubt tobacco, alcohol abuse, and some aspects of national diet and physical inactivity are major causes of premature mortality, ill health, and disability in Russia. These are also factors where effective and measurable interventions are available that generate benefits in years rather than decades, as shown in developed countries such as Finland and the United States.

III. WHAT ARE THE CONSEQUENCES OF THE DEMOGRAPHIC DECLINE AND THE HEALTH DEFICIT?

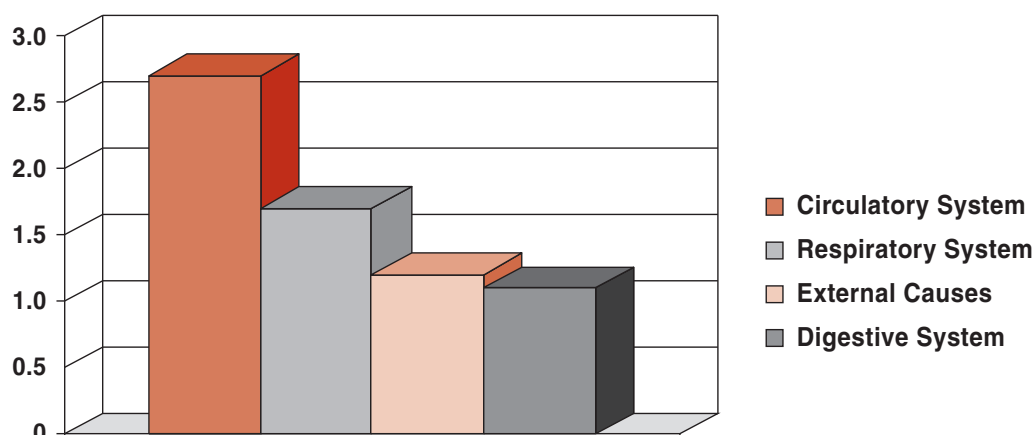
The unprecedented mortality upsurge Russia experienced in the 1990s is the product of a long-term deterioration of the health of the population associated with a prolonged period of highly unhealthy lifestyles and adverse environments, aggravated by a difficult socio-economic and political adjustment process (Cornia 2002, Mesle 2002). Russia's total population is expected to decline in the years ahead and will be accompanied by the aging of society as fertility rates remain under the replacement level. This has several important implications:

Fewer workers. If trends persist, the size of the Russian labor pool will continue to shrink significantly in the decades ahead. But population decrease may also result from the changing sex ratio that will probably lead to a new fertility decline in the future—an extreme sub-replacement fertility level (Andreev 2005). This presents a serious threat to Russia's development as the corresponding decline in the share of working-age adults due to high mortality and the increasing proportion of elderly people could adversely impact the economy. However, it should also be considered that a healthy population aged 65 to 75 may represent a sizable untapped workforce. Therefore, as lives grow longer overall, increasing the retirement age becomes an option to ensure the medium-term solvency of pension systems. This situation may also require the development of new work relationships with older people, including developing mechanisms to attract and retain older workers, especially knowledge workers (Drucker 1999).

The destabilization of families. The gender gap in life expectancy has led to instability in marriage and an extremely high proportion of widows (the percentage of widows in Russia at ages 30-44 is about four times the share in the United States).

Growing regional disparities. Uneven fertility, mortality, population growth, and life expectancy in different regions and among social and ethnic groups could exacerbate existing disparities. Difficulties in providing equitable access to resources for the poor may give rise to social and political challenges, especially in a country as vast as

Figure 9. Health Care Expenditures to Treat the Four Most Costly Disease Categories in Russia, 2003 (in US\$ Billions)



Source: Frid 2005.

Russia. This is an important policy consideration for any government, particularly when resources are scarce.

National security risks. From a national security point of view, the demographic and health crisis in Russia will present many challenges (Twigg 2004): (a) the number of men around conscription age will plunge rapidly in the decades ahead; (b) a growing percentage of the military budget will have to be allocated for the provision of medical, nutritional, and substance abuse programs for draftees and soldiers that are deemed medically unfit for duty; (c) long-term economic growth will depend on large cohorts of healthy and skilled young and middle-aged adults; and (d) if its vast territory is depopulated, instability could grow and the country could become increasingly difficult to govern.

Impact of NCDs and injuries on health care costs and the economy

According to IMF projections (IMF 2004), a decrease in working-age population will reduce labor productivity and incentives for investment in human and physical capital, which will in turn reduce per capita GDP growth. Government budgets will be squeezed as tax revenues fall because of a decline in the size of the working-age population and an increase in the needs and demands of an aging population. As the elderly population rises, the overall rate of saving and investment in a society will decline as more resources need to go to pensions, health care, and long-term residential care.

The large contribution of NCDs and injuries to sickness and mortality in Russia raises two serious economic issues. First, as many NCDs are chronic conditions that require expensive and prolonged medical treatment, to what extent is the Russian health system burdened with the cost of treating NCDs and injuries? Second, to what extent does Russian society suffer the economic consequences from premature mortality, ill health, and disability among its working-age adults?

High medical treatment costs: The 2003 cost estimates from two regions in Russia were analyzed and extrapolated to the national level for this study using US\$13 billion as the total health care expenditure figure, the widely accepted estimate of Russia's total health care expenditure, as a denominator, to determine the effect of NCDs and injuries on total health expenditures (Frid 2005). The regions were the Chuvash Republic (an agricultural region) and Kemerovo Oblast (an industrial region). The most expensive medical conditions proved to be NCDs or injury related. The analysis identified the four most expensive groups of diseases and injuries as circulatory system diseases, respiratory diseases, external causes, and digestive system diseases. These four conditions account for more than 50 percent of Russia's total health expenditures and pose tremendous challenges to the health care system. In 2003, the most expensive group comprised circulatory system diseases—hypertension, ischemic heart disease, and cerebrovascular disease—and cost the public health system US\$2.7 billion (83 billion rubles), or 20.8 percent of total expenditures (Figure 9).

What effect has adult ill health, in particular that due to NCD and injuries, had on the Russian economy and the economic outcomes of its population?

The overarching answer from an assessment prepared for this study is clear: poor adult health negatively affects economic well-being at the individual and household level (Suhrcke et al. 2005). If effective action were taken in Russia, improved health would play an important role in sustaining high economic growth rates at the macro-level.

The main findings of this assessment are:

The cost of absenteeism due to ill health: A simple, conservative estimate indicates significant costs of absenteeism due to illness: on average, 10 days are lost per employee per year due to illness in Russia, while in the EU-15 the average is 7.9 days. Sickness absence incurs a direct cost of the sickness benefits paid to absent employees as well as the indirect cost of lost productivity. The overall cost associated with the reported work-days lost to illness in Russia varies between 0.55 percent and 1.37 percent of GDP (annual absenteeism rates can be converted into a monetary value either by using the average wage rate, resulting in the lower value, or the GDP per capita, resulting in the higher value). This is a significant impact, given that the indicator fails to capture the many other ways ill health impacts the labor market. In particular, it does not capture the effects of reduced productivity and mortality.

The impact on the labor supply: Ill health also impacts labor supply because jobholders with chronic diseases or alcoholism are more likely than healthy individuals to either retire early or to lose their job and draw on state pensions. While a hypothetical Russian male aged 55 with median income and other average characteristics⁴ would be expected to retire at age 59, a chronic illness would lower his expected retirement age by 2 years. Similar results are obtained for females. Also, an individual who suffers from chronic illness has a significantly higher probability of retiring in the subsequent year than the same individual free of chronic illness. Chronic illness, therefore, is a highly significant predictor of subsequent retirement in Russia. The lower the

⁴ The other characteristics of this hypothetical individual are that he is married, has one child, has a high school diploma, was born in Russia, and is living in an urban area.

income of an individual in Russia, the more chronic illness affects the decision to retire. This implies that less affluent people carry a double burden of ill health: first, they are more likely to suffer from chronic illness, and second, once ill, they suffer worse economic consequences than rich people, a feature that tends to perpetuate socioeconomic disadvantage.

Job losses: Alcohol abuse, arguably an important factor in explaining the high adult mortality in Russia, significantly increases the probability of job loss.

The impact on the family: The death of a household member affects other household members' welfare and behavior in various ways. Alcohol consumption was found to increase by about 10 grams per day as a consequence of the death of an unemployed household member and by about 35 grams if the deceased was employed. Also, the probability of suffering depression increased by 53 percent when controlling for other relevant factors.

Chronic illness has negatively affected household incomes, particularly during 1998-2002, when it is estimated that chronic illness contributed to an annual loss of 5.6 percent of per capita income.

IV. WHAT STRATEGIES AND INTERVENTIONS PREVENT NON-COMMUNICABLE DISEASES AND INJURIES?

A number of developed countries have implemented a full range of effective strategies to prevent deaths and illnesses from NCDs and injuries. The research on effective policy measures and NCD risk factor interventions is growing steadily, enabling decision-makers to make informed policy choices. While the level of impact varies by strategy, local circumstances, and resource availability, the overwhelming evidence nevertheless suggests that an integrated strategy is most effective. That is, as demonstrated by the successful experience of the North Karelia Project in Finland, an integrated strategy incorporates all appropriate actions to reduce the burden of disease, including both population-based and high-risk prevention strategies (Box 1 on page 16). Data from North Karelia reveal that results from prevention efforts may

Box 1. AN INTERNATIONAL GOOD PRACTICE: NORTH KARELIA

The results:

The North Karelia Project in Finland shows that major changes in mortality from NCDs can be achieved through dietary changes, increased physical activity, and reduced smoking, serum cholesterol, and blood pressure. Coronary heart disease (CHD) in adults aged 65 years and less fell by about 73 percent between 1970 and 1995. In a recent 10-year period, mortality from coronary heart disease declined by about 8 percent a year. Mortality from lung cancer declined more than 70 percent, mostly due to consistent declines in the proportion of men who smoked (from 52 percent in 1972 to 31 percent in 1997). Data on the risk factors from ischemic heart disease and mortality in Finland suggest that the changes in the main coronary risk factors (serum cholesterol concentration, blood pressure, and smoking) can explain most of the decline in mortality from that disease.

As a result of targeting important high-risk factors for NCDs, all causes of mortality in North Karelia declined by about 45 percent during 1970-95. In the 1980s, these favorable changes began to develop all over Finland, improving life expectancy by 7 years for men and 6 for women. The largest decline in age-specific mortality was reaped by the 35- to 44-year-olds: men in this age group saw an 87 percent decline in mortality from CHD between 1971 and 1995. Men 35-64 saw age-adjusted mortality rates decline from about 700 per 100,000 population in 1971 to about 110 per 100,000 in 2001. This rate for all of Finland among men in the same age group was about 470 per 100,000 and fell 75 percent. These improvements in life expectancy are correlated with significant declines in the amount of saturated fats consumed, coming mainly from milk products and fatty meat (saturated fat consumption dropped from about 50 gr/day in 1972 to about 15 gr/day in 1992) and significant reductions in blood cholesterol levels (from about 7mmol/L in 1972 to about 5.6 mmol/L in 1997).

Success factors:

- *Appropriate epidemiological and behavioral framework*
- *Restricted, well-defined targets*
- *Good monitoring of immediate targets (behaviors, process)*
- *Flexible intervention*
- *Emphasis on changing environment and social norms*
- *Working closely with the community*
- *Positive feedback, work with media*
- *International collaboration, support from WHO*
- *Close interaction with national health policy, integration with National Public Health Institute*
- *Long-term, dedicated leadership*

Source: Puska et al. 1995

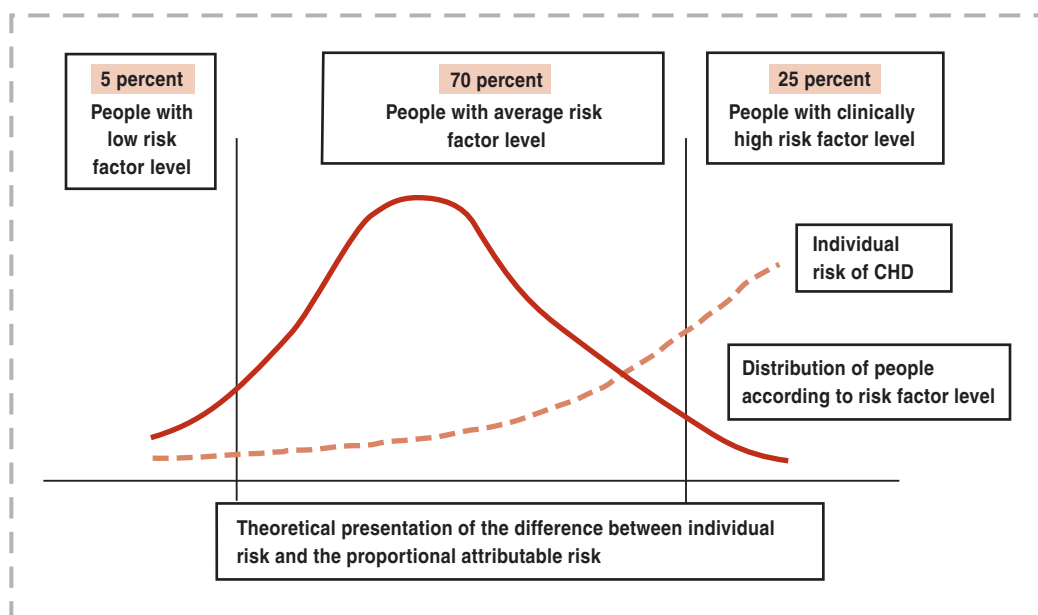
appear in years rather than decades—improvements occur some 2-7 years after the elimination of the exposure to a risk factor, and that they are beneficial even for people in older age groups.

NCDs and injuries are largely attributable to modifiable behavioral and environmental factors. The potential for

prevention through integrated strategies is great. The “population strategy” aims to change disease-related lifestyles, environmental factors, and their social and economic determinants in an entire population (e.g., information and communication programs addressing the risks of smoking and the value of smoking avoidance, excise and other taxes aimed at reducing smoking

uptake and intensity, and restrictions on smoking in public places and on tobacco advertising). The main argument for this strategy is that it targets a high proportion of NCD morbidity and mortality: the majority with risk levels near the mode of the distribution, the 70 percent group in Figure 10. This large group would benefit from interventions that are far less expensive than what the high-risk group needs, making the population strategy a cost-effective way to reduce NCD rates.

Figure 10. Distribution of Risk Factors in a Population



Source: Rose 1992, as shown in North Karelia Project Presentation, National Public Health Institute, 2005.

In the “high-risk strategy,” individuals at high risk of developing selected diseases are identified, and actions are planned to reduce their disease burden through provider-based interventions (e.g., clinical interventions to treat and counsel individuals about risk factors for CVD—smoking, excessive alcohol consumption, hypertension, hyperlipidemia, diabetes and obesity; management of patients at high risk according to established clinical practice guidelines; and therapy for individuals once overt CVD has occurred). High-risk strategies pose a major task for health services, and their per-person costs can be high.

The government’s role in disease prevention

From an economic perspective, government intervention is justified as a means to achieve a net improvement in social welfare, in terms of increased efficiency and for reasons of equity through redistribution (Barr 1994). Alternative government interventions, such as regulations, taxation, and public provision, need to be assessed to determine their costs and benefits, as sometimes governments lack the capacity to correct market failures. In the health sector, there are strong reasons to support government intervention where information is incomplete or imperfect, and as a result individuals do not clearly perceive the costs of their actions to themselves or others (Cutler and Kadiyala 1999). Some argue that in the areas of behavior and lifestyle, a wider govern-

ment role is justified when health benefits outweigh the curtailment or modification of individual choices (Musgrove 1996).

As the etiology of most NCDs is complex, so risk factors should be managed from multiple directions. The government’s role in disease prevention is multifaceted, including setting priorities, rallying constituencies for disease prevention, formulating policies and enacting and enforcing regulations, establishing infrastructure and institutions, and educating the public. Many disease-prevention efforts also require larger health system reform, for example, creating financial incentives to strengthen public health prevention and develop community-based intersectoral interventions to benefit the majority of the population.

Role of private employers

Involvement of the private sector is of particular importance. The poor health of employees has a short-term impact on the bottom-line of every company, not to mention a longer-term impact on the prospects for profitable growth. For this reason alone, business will have a vested interest in participating and investing in actions to reduce this cost burden. Companies, as employers, can have a strong influence on the behavior of their staff and can make them aware of the health risks in ways

not open to the government. Involvement of stakeholders such as major Russian companies and multinational corporations who have a wealth of international experience in employee- and community-directed health programs will be critical to the success of the program.

The concept of employers playing a larger role in improving fitness and health among their workers is not new. The U.S. Government is encouraging employers to invest in workplace health promotion, and about 95 percent of its large employers and one third of its smaller ones offer wellness programs.

A growing awareness of the costs linked to risk factors provides the grounds for a government to actively promote workplace-based initiatives. Johnson & Johnson launched a frequently-cited model of employer-based health promotion in the 1970s and claims to have saved US\$38 million in health care costs between 1995 and 1999 by promoting healthy lifestyles (Zeidner 2004). Between 1990 and 1999, the firm attributed annual savings of US\$225 per employee to intervention programs aimed at poor exercise habits, smoking, low fiber intake, and high cholesterol and blood pressure.

Citibank offered employees modest financial compensation for completing a health risk appraisal. Participants with risk factors were selected to receive educational materials and were monitored by a health counselor. The program saved US\$5 for every dollar spent.

PacifiCare recently offered US\$390 per year to employees to encourage them to eat better, exercise, and reduce smoking or drinking. Participants record their daily food intake and exercise routine. The company expects the program, not yet evaluated, to pay back more than its costs within two years.

V. IS RUSSIA DOING ENOUGH TO CONFRONT NON-COMMUNICABLE DISEASES AND INJURIES?

It is assumed that over the last three decades the Soviet health care system lagged behind that of western countries in terms of health care outcomes as the country was not able to take full advantage of new medical knowledge and technological advances, including new treatment regimes and drugs (Andreev et al. 2003).

A series of ongoing health reforms was initiated in Russia during in the 1990s to address this situation, mainly focusing on financing and delivery of services. Although these reforms changed the health sector's legal and organizational structures and contributed to some important legislation for addressing NCDs, the public health system largely retained its infectious disease focus. Recently, the Russian government set up institutional structures to respond to NCDs and injuries. However, improved institutional capacity is still needed to make disease prevention programs more effective. Many health experts, including Russian government representatives, generally agree that the Russian health system and the Ministry of Health and Social Development (MOHSD) are not yet equipped to tackle NCDs and injuries effectively.⁵

The CINDI experience: The Countrywide Integrated Noncommunicable Disease Intervention (CINDI) Program is a multi-country initiative of the World Health Organization (WHO). In Russia, the National Center for Preventive Medicine under the MOHSD manages CINDI, which has been actively implemented in Russia since the mid-1980s. Currently, 18 regions⁶ throughout Russia participate in the CINDI program, and four new regions have applied to join. The center works actively in the areas of disease prevention and health promotion. CINDI aims to support the reduction of smoking, unhealthy nutrition, alcohol abuse, physical inactivity, and psycho-social stress; enhance preventive practices of health professionals; and ensure success by exchanging information, sharing experiences, and building international networks. One of CINDI's major contributions is data collection and analysis of CVDs, as such information is not routinely collected in Russia. In addition, the program recently introduced new methods for the collection and analysis of data, which enables evaluation of the process of development and implementation of preventive measures (CINDI 2004). A good example of the application of new data

⁵ Opinions expressed during a World Bank-sponsored senior policy seminar on public health and disease control for Russian Government and other international and bilateral agencies in 2002-03.

⁶ The CINDI regions are Chelyabinsk, Electrostal, Krasnodar, Kostomuksha, Mirnyi, Novosibirsk, Orenburg, Pitkyaranta, Rostov on Don, Pontonnaya, Tomsk, Tver, Perm, Bijsk, Ufa, Murmansk, Verkynyaya Salda, and Vologda.

collection and research tools is in Pitkaranta, Karelia Republic, where over the past 10 years a health surveillance program was developed and implemented through collaboration among the Health Ministry of Karelia, the Central Hospital of Pitkaranta, the National Public Health Institute in Finland, and the North Karelia Project. As part of the project, surveys of risk factors are undertaken by trained teams of physicians and nurses every five years; they include a self-administered questionnaire, physical measurements, and laboratory tests. In addition, health behavior surveys are conducted by a mailed, self-administered questionnaire every two years (Laatikainen et al. 2005).

NGO efforts. In Russia, a number of NGOs, such as the Open Society Institute and its spin-off, the Open Health Institute, have since 1998 implemented activities aimed at developing public health training. Nearly 30 specialists have been trained as Masters of Public Health at the Hebrew University in Israel, and in several other schools. Graduates of international programs and other internationally recognized researchers have formed a number of associations, e.g., “For Public Health Support” and “Society of Evidence-Based Medicine Specialists.” The Moscow Medical Academy is running a full-time, two-year program in Public Health and Health Management. The St. Petersburg Medical Academy of Postgraduate Training, Tver Medical Academy (TMA), and Urals Medical Academy of Additional Education (UGMADO in Chelyabinsk) are implementing postgraduate training programs and courses similar to European schools of public health. All four academies provide training for specialists with different backgrounds. The Moscow Medical Academy has set up departments of Law, Economics, and Sociology with the involvement of non-medical professionals. TMA and UGMADO are providing problem-oriented courses for representatives of their regional legislative authorities and other non-medical professionals.

The problems. Although established structures and ongoing efforts such as CINDI could contribute to a solid foundation for NCD prevention and control in Russia, several critical elements hinder progress:

Insufficient coordination of NCD prevention and control activities. The roles and responsibilities in NCD prevention and control at the federal, regional, and local levels, as well as among the national institutes,

are not well defined or communicated. Coordination is especially important, since anti-NCD programs require multi-sector collaboration.

Limited workforce for NCD prevention and control. Human resources well trained in NCD prevention and control are lacking. Knowledge and skills relevant to NCD prevention and control need to be taught in medical academies, schools of public health, preventive medicine and nursing, post-graduate courses, and degree programs such as MPH and DrPH. Urgently needed are public health courses of various formats and foci targeted to a range of trainees, including (but not limited to) MOHSD staff, national institutes’ staff, primary health care providers, specialist physicians, nurses, sociologists, psychologists, administrators and managers, journalists, health statisticians, and public relations professionals at all levels.

Inadequate access to information on NCD prevention and control. Regional and local staff have had limited training in modern approaches to NCD prevention and control and lack ready access to information. Lack of English proficiency is a common barrier to international sources of information. Numerous examples of scientific methodologies, programs, and evaluation results at regional and local levels exist, but information about experiences and good practices in health promotion is not well shared. Many regional and local staff start from scratch and rely on self-learning, and some regional staff have developed materials and interventions on their own. Feedback or mentoring from the federal level, now limited, would propel such efforts: the lack of federal leadership leads to high variability in content and approaches, whereas tested, effective, well-focused, and consistent messaging for the target populations is required. Federal institutes could be natural nodes for collaboration and information sharing.

Treatment bias. Health care providers tend to treat patients only for the condition that stimulates the patient’s visit. Providers need to be trained to watch for and ask about other symptoms that would signal another condition(s) and to talk to patients about risky behaviors and exposure.

Limited funding for NCDs prevention activities. As the resources allocated to NCDs prevention activities are low, the development of a financial policy is required

for supporting integrated prevention programs and activities at the federal and regional levels. Given the magnitude of economic benefits that can be expected from improving adult health in Russia, any reasonable and well-designed increase in the resources devoted to health, both inside and outside the health system, would produce a significant economic return. The challenge is of course not solely to increase resources, but also to put existing resources to better use.

Inadequate NCD surveillance capacity and research efforts. A surveillance system that tracks trends and reports cases is a key public health tool for preventing and controlling NCDs, but Russia's capacity for implementing, monitoring, and evaluating NCD prevention and control is weak. Several regions have tried to collect data on behavior and risk factors, but epidemiological surveys are intermittent, underfunded, and limited in scope and coverage. Monitoring and reporting surveillance data, coupled with research and evaluation activities, are necessary in developing relevant health policies and effective programs at the federal and regional levels.

VI. WHAT ADDITIONAL ACTIONS CAN RUSSIA TAKE?

The Russian Ministry of Health and Social Development is currently preparing a federally-targeted program aimed at preventing and controlling premature death, ill health, and disability caused by NCDs and injuries. A well-defined and structured national program of population-based and clinical interventions to confront NCDs and injuries would help improve social welfare and contribute to sustainable economic growth by: (a) bettering the health of the economically active population; (b) reducing labor supply and productivity losses due to preventable deaths, illnesses, and disabilities from NCDs and injuries; and (c) minimizing regional disparities by reducing social risks for NCDs and injuries in the most vulnerable regions.

A nationwide federal mortality reduction program should include: (i) federal-level policies and strategies, (ii) priority sub-programs for regions, and (iii) measures to improve road safety and emergency services.

■ POLICIES, STRATEGIES, AND CAPACITY-BUILDING AT THE FEDERAL LEVEL

National subprograms need to be defined, taking into consideration the magnitude of each health threat and the political commitment required to solve or manage it, as well as the feasibility and cost-effectiveness of implementing the subprogram. The support mechanisms that would be required for success, including legislative frameworks, institutional capacity, and federal oversight would need then to be considered.

Select priority subprograms

Subprograms can target the population at large ("primary" or "population-based" efforts) or individuals who need clinical intervention ("secondary" or "individual" efforts). These individuals have risk factors present and need medical attention, treatment, and follow up to prevent their existing condition(s) from deteriorating.

Population-based subprograms. Priority subprograms should be developed to address alcohol, tobacco, road safety, and diet/physical activity.

Individual clinical intervention subprograms.

Priority subprograms should be developed to help people with hypertension, elevated levels of cholesterol, and/or diabetes.

Develop legal, policy, and strategy support for priority subprograms

Success in three of the population-based subprograms (alcohol, tobacco, road accidents) requires a strong legislative framework: laws, regulations, and enforcement mechanisms. The legal framework would set out the national strategy and selected subprograms. Passing laws, issuing regulations, and developing strategies require strong political and technical leadership and broad support for the national program from myriad stakeholders. Good communication is essential, including stakeholder consultations, public relations campaigns, working with the mass media, educating the public, and developing strategies to convey behavior change messages.

Build institutional capacity to implement priority subprograms

This would entail (a) strengthening national technical leadership in developing a national strategy, action plan, and health goals; creating a popular and political consensus on the strategy and goals; and establishing twinning arrangements with international partners; (b) developing mechanisms for creating multisectoral links with other ministries, nongovernmental organizations, and the private sector; (c) implementing professional training to remedy the shortage of trained public health professionals and researchers; (d) creating a surveillance system integrated with a federal databank to generate valid, reliable, and timely data; (e) overseeing empirical research, including a national population-based cross-sectional household survey; and (f) partnering with the private sector and civil society to increase program effectiveness and success.

Assure federal oversight of and accountability for priority subprograms

The MOHSD should be the coordinating ministry, and a high-level working group located within the Presidential Administration should ensure that the actions of participating ministries and the private sector are executed on a timely basis. This group's members could include the Ministries of Health and Social Development, Transport, Justice, Agriculture, Education, Industry, Science and Technology, Economic Development and Trade, and Finance. To ensure the technical quality of the program and its relevance to the Russian context, the group should be supported by technical working groups responsible for coordinating and/or executing specific subprograms.

■ PRIORITY SUBPROGRAMS IN REGIONS

The second focus area should support implementation of national priority programs in the regions, executing the nationally-defined priority subprograms associated with NCDs and injuries, but allowing for regional differences in health status to be taken into account and choosing region-specific, appropriate, effective interventions. Activities should include primary prevention (before problems arise) through population-based interventions targeting alcohol, tobacco, and diet/physical activity and secondary prevention (to control disease in

its early stages and prevent its progression) through clinical interventions targeting individuals with high blood pressure, elevated cholesterol, and diabetes.

Activities would seek to control multiple risk factors. The continuum of care would cover prevention, diagnosis, treatment, and follow-up at the inpatient level, in ambulatory settings, in work places, and at homes. The subprograms should support the development and national implementation of preventing and controlling NCDs, taking into account Russian expertise and guidelines from the World Health Organization. Population-based interventions as well as individual clinical interventions should be covered at the federal, regional, and municipal levels.

The subprograms should build on the CINDI Program experience and promote healthy behaviors by awarding "health promotion initiative grants" to stimulate innovative health promotion and disease prevention initiatives at the regional and municipal levels, and to build capacity at these levels for implementing integrated approaches. Technical assistance should be provided to assess the capacity and readiness of various partners and organizations to undertake health promotion and prevention activities, to establish efficient organizational and managerial structures for health promotion, and to conduct process and outcome evaluation studies to ascertain the extent to which the federal program is meeting its objectives.

Population-based primary prevention interventions

Control of Alcohol Consumption

Priority actions for controlling excessive alcohol consumption should target both supply and demand.

- **Supply side:** Alcoholism can be prevented by limiting the availability of alcohol beverages through the regulation of production, quality assurance, distribution, prices, access (particularly for minors), and advertising. Supply can be regulated through higher taxes and prices and preventing access to alcohol sales by reducing the number and operating hours of sales outlets and requiring sellers not to sell to minors. To be effective, these policies must be coupled with restricting advertising and issuing messages

compatible with healthy lifestyles. Particular attention must be paid to prevention of (a) the sale of surrogate alcohol, which is especially toxic due to high ethanol content, and (b) home-produced alcohol. In addition, stronger laws against drunk driving are needed.

- **Demand side:** Demand could be modified through education and information to reduce the initiation of excessive drinking, particularly among youth, and excessive drinking among heavy drinkers; promoting moderate consumption of alcohol; and increasing awareness of the adverse consequences of alcohol abuse. Efforts should be tailored to the diverse circumstances of the general population, adolescents (especially students), pregnant women, drivers of private and commercial vehicles, family members of alcoholics, and worksite supervisors. Health professionals and volunteers can provide key support in achieving these educational goals through training and advisory assistance to teachers and community leaders. There is a need for a major review of the effectiveness of Russian narcology services and innovative methods, such as motivational interviewing, shown to be effective in other countries.

Tobacco Control

- The highest priority should be for the Government to sign the WHO-sponsored Framework Convention on Tobacco Control and to enforce existing policies for smoke-free worksites and public places, and, if allowed by the existing regulatory environment, to extend their scope to all workplaces and enclosed public places. This may require aggressive education and information efforts so that people understand the risks of inhaling second-hand smoke. There is considerable international experience on how to implement and enforce such policies.
- The second priority should be to identify successful tobacco control and smoking cessation efforts and expand and build on them. It is important to evaluate program impact to learn which programs are most cost-effective and worthy of expansion.
- Substantial tax increases are needed and should be designed to steadily raise cigarette prices and reduce their affordability. Simultaneous efforts must reduce smuggling and informal market cigarette sales. Fines

that are consistent with the very large profits being made should be employed when people are convicted of selling cigarettes on which taxes have not been paid. This measure may deter some violators, would generate revenue for enforcement, and would cut into informal market profits, perhaps causing increases in the prices of these cigarettes.

- Too many Russian physicians still smoke, setting a bad example. Surveys at the end of the 1990s indicate that about 60 percent of current smokers say they would like to quit. Nicotine is highly addictive, and smokers need help and support to quit. Physicians should be trained (in medical school and later through continuing medical education) to ask patients whether they smoke, provide advice and written materials with tips on quitting, and increase availability of cessation support services.
- Large, strongly worded health warnings should be required on all cigarette packs (imported and domestic) sold in Russia. In addition, advertisers should be required (with strong enforcement and large fines for noncompliance) to display large warning labels covering about 20 percent of all print advertisements, and to pay for counter-advertising in a required proportion to all radio and TV advertising. These recommendations are low cost for the MOHSD, but they are made with awareness of Russia's difficult history of attempts to implement tobacco advertising bans and restrictions, which have been resisted successfully by the media and cigarette companies.
- Legislation banning all tobacco advertising, promotion, and sponsorship and banning tobacco product sales to minors should be considered.

To work properly, however, suggested alcohol abuse and tobacco control measures will depend on the capacity of law enforcement agencies to implement and enforce related laws and regulations.

Changes in Diet and Promotion of Physical Activity

Five of the ten leading risk factors contributing to high levels of mortality are influenced by diet and sedentary lifestyle: high blood pressure, elevated cholesterol levels, and high body mass index. Priority actions for this population-based intervention should include:

- Public health policies promoting dietary guidelines for healthier eating;
- Celebrities and well-known athletes serving as champions for an active lifestyle, low body mass index, and healthy diets;
- Corporate and social responsibility of the food manufacturing industry in manufacturing and marketing healthier food;
- School programs on the importance of diet and physical activity and their contributory causal relationships to cardiovascular disease, cancer, and diabetes;
- Public health policies promoting regular physical activities; and
- An outdoor environment that invites physical activity: bicycle paths, sidewalks, and crime-free parks.

Secondary prevention interventions

Clinical interventions occur at the patient level in a health care setting. The physician is responsible for (a) early detection and diagnosis through laboratory testing of hypertension, high total and/or LDL cholesterol, and early signs of diabetes; (b) prescribing correct treatment; (c) following up by checking patient compliance with treatment, periodic retesting, and adjusting treatment regimen; and (d) informing patients of health risks and where to find more information and help. These efforts should build upon ongoing reforms of the primary care system at the regional level, such as in the Voronezh Oblast and the Chuvash Republic supported under the Health Reform Implementation Program.

Hypertension. Individuals with uncontrolled hypertension have a three to four times greater risk of developing coronary disease and a seven-fold greater risk of having a coronary event than those with normal blood pressure. Early detection, timely treatment, and monitoring of treatment compliance would reduce cardiovascular mortality. However this must take account of the financial burden on people needing long-term care (e.g., in many parts of Russia drugs must be paid for out-of-pocket).

Cholesterol. High cholesterol levels are related to diet and have a significant impact on cardiovascular mortality. Strategies for reducing mortality from CVDs include (a) screening people with multiple risk factors at the local level and at worksites; (b) expanding accessibility, coverage, quality, and timeliness of care, including follow-up programs; and (c) health education and community activities to control risk factors and increase treatment compliance.

Diabetes. Primary prevention of diabetes is feasible in part through physical activity, appropriate diet, and control of obesity. The importance of this pathology rests on its complications (e.g., blindness, renal insufficiency, and cardiovascular and neurological complications), and its control is critical in the prevention of such complications. A secondary prevention program is therefore necessary at the primary care level. Primary care strategies must include early detection and diagnosis in high-risk groups (e.g., obese and pregnant women) and effective follow-up and monitoring of all cases diagnosed. Orientation for nurses, teachers, and community health workers on proper management of diabetes can have a multiplier effect on basic actions carried out among patients and their family members.

Regional support subprograms for implementing the national mortality reduction program.

Analogous to the institutional capacity-building subprograms defined at the federal level in the first focus area for implementing priority subprograms, the regions and municipalities should (a) conduct professional training programs and empirical research studies; (b) develop mechanisms to link the various stakeholders and form partnerships; (c) implement a surveillance system to monitor the epidemiological evolution of the incidence and prevalence of NCDs and injuries targeted in the priority programs; and (d) develop regional databases compatible with the structure and contents of the federal one and capable of data sharing and reporting progress towards achieving the national objectives.

Regions and municipalities should receive technical assistance from the federal level to establish, implement, and/or strengthen these support systems. Regions and municipalities with strong support infrastructures should provide technical assistance to regions with weaker ones. Also, regions and municipalities could work in clusters to share experiences and collaborate.

■ IMPROVED ROAD SAFETY AND EMERGENCY MEDICAL SERVICES

As these efforts involve many more stakeholders than does the control of other risk factors, they warrant a separate area of focus.

Federal Level Responsibilities

Experience from other countries shows that improving road safety requires a consistent, 20- to 30-year effort to develop and implement comprehensive, integrated safety programs, including enhancement of road safety, auditing processes, and funding of interventions in priority high-risk road corridors. Business planning processes and performance monitoring systems must be created to support such a long-term strategy, and the first phase of such a strategy should lead to consensus among stakeholders and public sector agencies on a long-term action plan based on demonstrably successful interventions. A financing plan for implementing the strategy should also be specified. Support should be provided to develop a program of road-user education, traffic safety enforcement, and emergency preparedness along a first set of demonstration corridors.

Motorization in Russia has increased rapidly, and the public sector response has emphasized basic traffic management functions, such as driver licensing and vehicle inspection and registration. International experience suggests that such programs, although important for general standards setting and administration, have only a marginal impact on accident and fatality rates in the short term. To curb rapidly rising accident and fatality rates, targeted, cost-effective measures that have an immediate impact, such as speed-limit and drunk-driving enforcement, separation of traffic, and motorcycle helmet law enforcement, must be identified, implemented, and monitored under a comprehensive program.

Public awareness of road safety must change. For example, alcohol appears to be a bigger traffic safety problem than is acknowledged, but there is virtually no public or political support for countermeasures or a sufficient legal basis to deter drunk drivers. Furthermore, laws requiring seat belts and motorcycle helmets and imposing speed limits are seen as ineffective or in conflict with personal freedom. Finally, in the face of poor traffic behavior, traffic police lack knowledge of—and incentives for developing—more effective policing

strategies, have limited resources, and see apprehending offenders as their responsibility rather than deterring unsafe behavior.

Specific federal responsibilities would be to (a) ensure that an enforceable legislative framework is in place by reviewing and revising existing laws and reviewing and adjusting regulations that implement them; (b) formulate a national road safety strategy and subprogram, identifying risk factors as a basis for planning and improving effective prevention of injuries through a combination of education, regulation, enforcement, engineering, and technology; (c) establish the right mechanisms to forge links with public sector entities, industry, and NGOs; (d) identify dangerous road corridors for early action; (e) set standards and disseminate clinical protocols specifying procedures on clinical management of patients during emergency medical services on the road, while in transport, and in trauma centers and hospitals to reduce pre-admission death rates and disability from accidents; (f) create a national road accident database and establish/upgrade a management information system on road traffic accidents; (g) establish, implement, and maintain a robust monitoring and evaluation framework with indicators and national and regional targets; and (h) provide technical assistance to regions.

Regional Responsibilities

Each region should develop its own road safety strategy and action program following the federal program. Regions should be responsible for implementing national laws, standards, and guidelines; implementing emergency medical services; and developing an inter-institutional emergency medical network, including the ambulance network and emergency communication system.

Regional responsibilities for training, capacity building, developing partnerships and collaborative arrangements among all sectors, monitoring implementation of action plans, evaluating the outcomes of the road safety strategy, and developing a regional database compatible with the federal one are similar to those described in the previous focus area on alcohol, tobacco, and diet/physical activity. Also analogous is that regions implementing road safety strategies and programs should receive technical assistance from the federal level to establish, implement, or strengthen the support systems. Regions that already have a strong support infrastructure should pro-

vide technical assistance to weaker ones, and, again, regions could work in clusters to share experiences and collaborate.

Cost-effective interventions for preventing road traffic injuries should include (World Bank 2004d):

- **Road environment:** safe design of new infrastructure; retro-fitting current infrastructure with of low-cost safety design features (medians; roundabouts; separation for motorcyclists, cyclists, and pedestrians); systematic maintenance of all safety features, systematic reviews to identify and remediate road hazards, systematic safety audits of road designs to ensure compliance with safety standards and regulations;
- **Speed management:** general deterrence-based police enforcement and education to ensure compliance with speed limits;
- **Safety belts and helmets:** general deterrence-based police enforcement and education to ensure compliance with child restraints, child auto safety, and helmet standards and rules;
- **Drunk driving:** general deterrence-based police enforcement and education to ensure compliance with legal alcohol limits;
- **Novice drivers:** graduated driver licensing system to control and reduce the risk exposure of young drivers;
- **Vehicle safety:** harmonization with international best practices and systematic inspection and certification to ensure industry compliance with standards and rules;
- **Commercial vehicles:** general deterrence-based police enforcement and education to ensure compliance with safe loads, driving hours and vehicle standards;

Table 6. Estimated Improvements in Life Expectancy if Mortality Rates Are Reduced by 20 and 40 Percent, Russian Males, 2000

	Current Life expectancy	Circulatory		Digestive		External causes	
		20	40	20	40	20	40
Birth	57.77	62.5	63.9	58.3	59.8	61.3	62.5
20-24	40.08	44.0	46.2	40.6	41.9	45.4	46.2
25-29	35.74	41.7	44.2	36.3	37.5	40.4	42.0
30-34	31.82	37.8	40.6	32.3	33.4	35.7	36.1
35-39	27.78	33.8	34.6	28.3	29.6	30.9	32.9
40-44	24.19	30.0	30.8	24.6	25.1	26.6	27.9
45-49	20.40	26.1	28.3	20.8	20.9	22.2	25.3
50-54	17.33	22.5	24.8	17.6	17.7	18.6	19.2
55-59	13.92	18.7	21.5	14.2	14.2	14.7	15.4
60-64	11.48	15.1	17.0	11.6	11.6	11.9	14.1

Source: Bakilana 2005.

- **Child safety:** traffic safety education in the core school curriculum; and
- **Emergency medical services:** pre- and post-hospital care and victim recovery targeted to high-risk corridors, including communication and ambulance networks, well-trained teams, and improved emergency care wards in hospitals.

VII. WHAT HEALTH IMPROVEMENTS COULD RESULT FROM AN INTENSIFIED PROGRAM OF ACTION?

To estimate the effect reductions in cardiovascular, digestive, and external causes of diseases could have on life expectancy in Russia, an assessment was conducted using the Multiple Decrement Life Table approach.⁷

⁷ Age-specific and age-and-cause-specific death rates and cause of death ratios were computed, and an ordinary life table using age-specific death rates for all causes combined was developed. Next, death rates were distributed by cause, indicating the total number of deaths in each age group. Probabilities of death by cause were then computed by cause elimination, after which the associated decrement tables were calculated.

Table 7. Estimated Improvements in Life Expectancy if Mortality Rates Are Reduced by 20 and 40 Percent, Russian Females, 2000

	Life expectancy	Circulatory		Digestive		External causes	
		20	40	20	40	20	40
Birth	72.3	73.9	75.2	73.2	74.1	72.8	73.1
20-24	54.0	55.6	56.9	54.9	55.8	59.5	64.8
25-29	49.3	50.9	52.2	50.2	51.1	49.8	50.1
30-34	46.6	46.2	47.5	45.5	46.4	45.1	45.4
35-39	40.0	43.6	42.9	40.9	41.8	40.5	40.8
40-44	35.4	37.0	38.3	36.3	37.2	35.9	36.2
45-49	30.9	32.5	33.8	31.8	32.7	31.4	31.7
50-54	26.7	28.3	29.6	27.6	28.5	27.2	27.5
55-59	22.6	24.2	25.5	23.5	24.4	23.1	23.4
60-64	18.8	20.4	21.7	19.7	20.6	19.3	19.6

Source: Bakilana 2005.

If mortality from preventable or treatable components of circulatory and digestive diseases and external causes can be reduced in working-age adults in Russia, important improvements would result in life expectancy for both men and women (Table 6 on page 25 and Table 7). For example, life expectancy at birth for men could increase as much as 5 years by reducing CVD by 20 percent. The estimates of reducing external causes of mortality (road accidents, intentional self-harm, and assaults) signal that this as another high impact avenue for raising life expectancy in Russia. The impact of reducing the burden of these conditions among men is more evident in adulthood.

Although women in Russia already live longer than men, significant gains are possible for women, too, although the magnitude of the improvement is not as large (Table 7).

As shown in Figure 11, WHO estimates also show that major improvements in healthy life expectancy (HALE), which captures both mortality and morbidity, can be expected by reducing major risk factors. The region that includes Russia, EUR-C,⁸ can expect to gain more than 10 years of HALE by reducing the 20 leading risk factors. This is a very important finding because increasing life expectancy, but not healthy life expectancy, would

increase the burden on the health system due to sickness and disability among the older age groups.

VIII. WHAT ARE THE POTENTIAL ECONOMIC BENEFITS OF MORTALITY REDUCTION IN RUSSIA?

The potential impact of policies that promote reduction in preventable adult mortality on the economy may be seen by comparing three scenarios. The status quo scenario assumes that 2002 levels of adult mortality from NCDs and injuries will remain constant until 2025. A more optimistic scenario assumes that policies are

⁸ EUR-A (countries with very low child and adult mortality): Andorra, Austria, Belgium, Croatia, Cyprus, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Luxembourg, Malta, Monaco, the Netherlands, Norway, Portugal, San Marino, Slovenia, Spain, Sweden, Switzerland, and the United Kingdom; EUR-B (countries with low child and adult mortality): Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Bulgaria, Georgia, Kyrgyzstan, Poland, Romania, Serbia and Montenegro, Slovakia, Tajikistan, the former Yugoslav Republic of Macedonia, Turkey, Turkmenistan and Uzbekistan; and EUR-C (countries with low child and high adult mortality): Belarus, Estonia, Hungary, Kazakhstan, Latvia, Lithuania, the Republic of Moldova, the Russian Federation, and Ukraine.

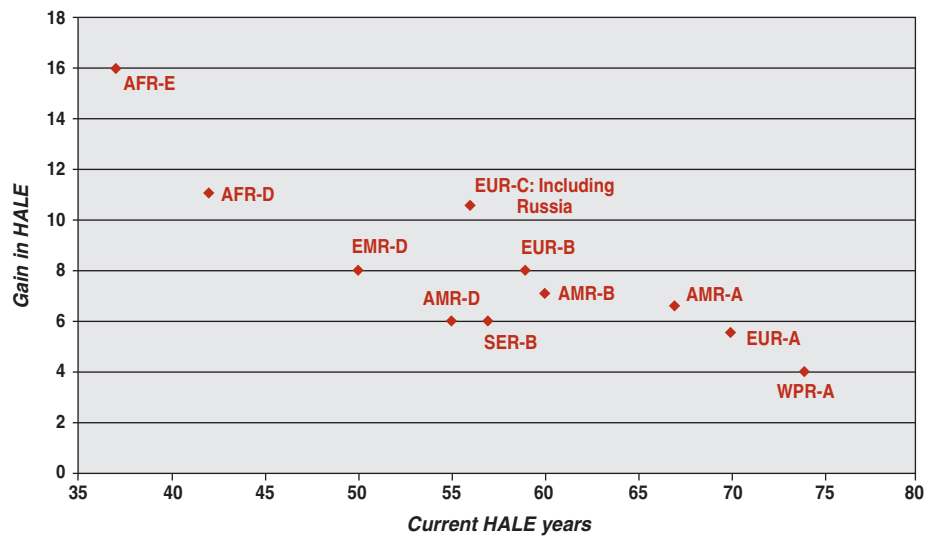
adopted that cause a decline in Russian mortality rates from NCDs and injuries to the current EU-15 level: an annual rate of reduction of 4.6 percent for NCDs and 6.6 percent for injuries. An intermediate scenario assumes that policies are adopted that achieve half the improvement seen in the most optimistic scenario.

The main conclusion of an assessment prepared for this study (Suhrcke et al. 2005) is that the benefits would be substantial for the Russian economy as a whole, irrespective of how they are evaluated. This occurs despite the fact that the assessment concentrates only on the effect of mortality reductions, without considering the impact of the reduction of the associated ill health.

The main findings of the assessment are:

- The static economic benefits (i.e., valuing a year of life by one GDP per capita) of gradually bringing the adult NCD- and injury-mortality rates down to the European Union (EU-15) countries' rates by 2025 are estimated to be between 3.6 percent and 4.8 percent of the 2002 Russian GDP.
- When a broader concept than GDP per capita is considered (measured by adding the value of changes in annual mortality rates using a "value of a statistical life" to changes in annual GDP per capita), the "welfare" benefits from achieving EU-15 rates by 2025 are estimated to be as high as 29 percent of the 2002 Russian GDP.
- The dynamic benefits of improving adult health, i.e., the effect on economic growth rates, are massive and growing over time: while in 2005 the difference in the per capita GDP between the status quo scenario and the most optimistic scenario is only US\$105-324, by 2025 this difference would have grown to US\$2,856-9,243. Figure 12 illustrates the predicted path of GDP per capita under the three scenarios, using the very con-

Figure 11. Estimated Gains in Healthy Life Expectancy with Reduction of the 20 Leading Risk Factors by Subregion



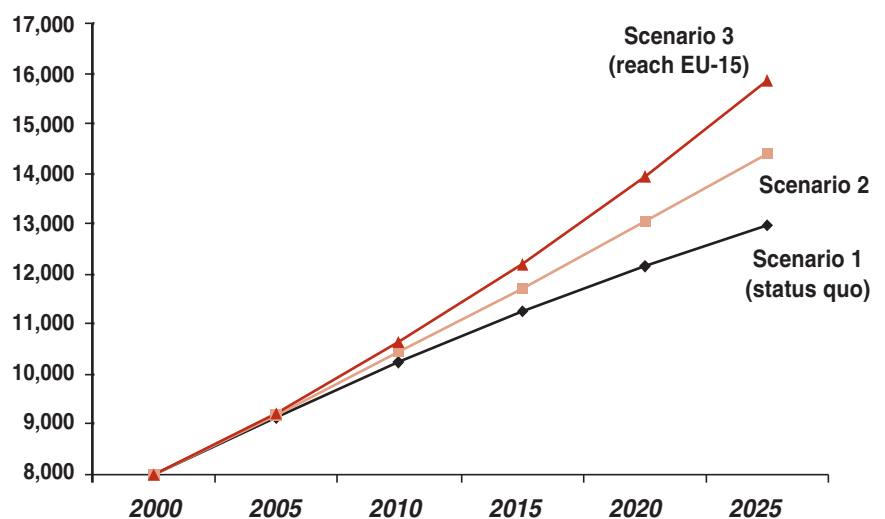
Source: Adapted from WHO 2002b.

servative lower bound of the growth estimates calculated. The area between the scenario 1 and scenario 3 lines indicates the economic benefit of the optimistic scenario.

Reducing NCDs and injury-related mortality rates among Russian working-age adults will therefore have a major macroeconomic and poverty reduction impact.

Figure 12. Russian GDP per Capita Forecasts in the Three Scenarios

1996 constant U.S. dollars



Source: Suhrcke et al. 2005.

Based on this preliminary assessment, the expected economic benefits are of a magnitude that easily outweighs the costs of health intervention and prevention programs. The reversal of current trends and the realization of future gains in Russia can only be attained by extending life among the working-age population, particularly among males, as male life expectancy has not recovered from its 1990-94 drop below 60 years of age. Given the significant positive effect on economic growth from investing in health (Barro 1997), governmental intervention is urgently needed in Russia to develop health-enhancing policies and programs to address the alarmingly high mortality rates among the working-age population. These efforts should be seen as key investments to help improve general welfare and secure sustainable economic growth.

EPILOGUE

Russia is experiencing a major and complex demographic and health crisis characterized by premature mortality; ill health and disability among young adults, particularly males; dramatic decreases in life expectancy; and a reduction in population size, coupled with the aging of its population. The population at large, particularly in the less developed regions of the country is affected by risk factors associated with higher disease and disability levels due to non-communicable conditions and injuries. These conditions require treatment and care on a continuing basis to control them and prevent, if possible, disability. The health care system, individuals, families, and communities bear a heavy burden due to the chronic nature of these conditions. Poor adult health negatively affects economic well-being at the individual and household level, and, if effective action were taken

in Russia, improved health would play an important role in sustaining high economic growth rates at the macro-level.

This report argues that most NCDs and injuries could be prevented and controlled through a comprehensive national program operating at the federal, regional, and municipal levels. Program features would include (a) addressing health as a multisectoral concern; (b) demand- and supply-side incentives to encourage healthy behaviors; (c) modern approaches to disease control, including strengthening the country's disease surveillance, research, and evaluation capacity; (d) an upgraded workforce and intersectoral institutional arrangements and structures to meet current needs; and (e) funding policies to support the scaling up of health promotion and prevention of NCDs and injuries.

Much of the NCD and injury burden can be avoided with the adoption of good practices that have been proven at the international level. Similar to the significant and sustained achievements under the North Karelia Project in Finland, major health gains can be achieved in Russia in a short period by modest lifestyle changes if they are practiced by major segments of the population. In addition, intervention during the clinical stages of the disease has more impact and is less expensive to the health care system if treated early.

The time has come, therefore, to transform the concept of health care in Russia by acknowledging the limits of medicalization and the breadth of social and economic factors that affect health, including the responsibility of individuals for their own health and government responsibility for creating an enabling environment for its population to make healthier choices (Califano 1994).

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