Non-Communicable Diseases and Injuries in Eastern Europe and Eurasia

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ACRONYMS

CEE	Central and Eastern Europe Region
DALY	Disability Adjusted Life Years
E&E	Eastern Europe and Eurasia
EMS	Emergency Medical System
EU	European Union
EURO	WHO European Region
HFA-DB	European Health for All Database
HIC	High-Income Countries
INF	Infectious Diseases
INJ	Injuries
LMIC	Low-Middle Income Countries
NCD	Non-communicable Diseases
NCDI	Non-communicable Diseases and Injuries
RTI	Road Traffic Injuries
SDR	Standardized Death Rates
WHO	World Health Organization

Executive Summary

Overview

Evidence gathered and presented by the Johns Hopkins University, World Bank, World Health Organization (WHO), European Union (EU), and other organizations and summarized in this report demonstrates that non-communicable diseases and injuries (NCDIs) play a major role in the high mortality and morbidity rates and have a major economic impact on the countries of the Eastern Europe and Eurasia (E&E) region. This report begins by assessing the burden and impact of NCDIs in the E&E region, and then identifies successful interventions. Based on an analysis of best practices, we propose examples of specific NCDI interventions that are cost-effective and will improve health outcomes in the E&E region.

The Burden of NCDIs

Of the over 85 percent of deaths attributable to NCDIs in the E&E region, 57 percent are due to just one non-communicable disease — coronary vascular disease, a type of cardiovascular disease. Every year, over 16 times more people in the E&E region die from NCDIs than from the combination of all infectious diseases, maternal and peri-natal conditions, and nutritional deficiencies. Life expectancy in the 16 countries of the E&E region is 5.1 to 17.3 years shorter than the life expectancy in the European Union. This fact has significant implications for specific countries in the region. For example, as noted in one World Bank study, “If Russia matched the European Union death rates for just one illness, coronary vascular disease; life expectancy [in Russia] would increase by 6.7 years.” Injuries are one of the leading causes of death and disability in Europe; with death rates due to injuries 60 percent higher in Eastern Europe than in Western Europe. Mortality rates from injuries, poisoning, and violence are nearly 2.5 times higher in Central and Eastern Europe, compared to the 15 original countries in the European Union. In Eastern European countries, the standardized death rate among males in the age group of 15–44 years is higher due to injuries than to chronic and other infectious diseases.

While NCDIs are often perceived as conditions that only affect the aged, numerous studies and data presented in this report show that in all countries of the E&E region,

death and disability from NCDIs affect people at every age, of both genders, and of all socio-economic classes. Cardiovascular diseases, for example, regularly go undetected, particularly in young women, causing more women than men to die each year from heart disease and stroke. Young people are more likely to experience unintentional injuries, such as those resulting from road traffic incidents, which are the second leading cause of death in the age group 5–29 years. In addition, childhood injuries and asthma cause many missed school days, depriving children of both their education and social interaction.

Due to their long duration, NCDIs also have a major economic and social impact on the families of the individual. For example, in Russia between 1998 and 2002, NCDIs reduced per capita income by 5.6 percent each year. The cost of injuries alone is estimated as 1–2 percent of GNP for each country. When a member of a household suffers a stroke or severe injury, the family does not only lose a productive member; the victim often requires multiple caregivers. One or more members of the family must take on the added burden of purchasing medications and providing care. The impact on children may include being withdrawn from school in order to work or care for the ill parent. Unlike an acute illness where the impact is time limited, non-communicable diseases and injuries can be an economic burden to the family for an indefinite period of time, increasing the likelihood of continued impoverishment.

Current Responses

Some international aid agencies have tended to focus on one major public health issue at a time. Historically, this has led to competition for funding among advocates of different public health issues. Most major international aid agencies in the E&E region, including USAID, have focused their attention on infectious diseases such as tuberculosis and HIV/AIDS. We believe that it is imperative that advocates for infectious disease and NCDIs cooperate in their efforts rather than promote competition for funding. Given the burden of NCDIs, if donors are committed to improving health, and are seeking to significantly address premature mortality in the region, treatment of NCDIs must be integrated into existing healthcare programs. There is considerable evidence that programs designed to prevent and manage NCDIs can be inexpensive and cost-effective, and can substantially improve the health of the population in the E&E region.

This report shows that in spite of the limited funding, inexpensive, cost-effective, and highly effective programs to prevent and manage NCDIs have been implemented in the E&E region by USAID and other donors. Programs for diabetes, asthma, tobacco control, and cardiovascular disease are described in this study as examples of highly successful NCD programs that could be easily and inexpensively replicated and integrated into existing healthcare systems. Programs for alcohol and substance abuse prevention, road traffic injuries, emergency medical systems, and domestic violence management have been implemented successfully with great potential for going to scale while retaining their cost-effectiveness. Together, these programs provide measurable progress toward reducing mortality and morbidity from NCDIs in the E&E region.

Potential Programs/Investments

We highlight four NCD pilot programs that were successful in their initial funding stage and were sustained once initial funding from USAID ended. They were identified by evaluating over 100 programs funded by USAID in the E&E region. All programs are low cost per person and have a low cost per disability adjusted life year (DALY). They have been used to propose four types of model NCD programs for the region as follows:

- *Strengthened cardiovascular screening and control within a primary healthcare setting*: based on a cardiovascular disease program in Tula, Russia, which decreased hospital hypertension treatment costs by 41 percent, primary care hypertension management costs by 39 percent, and the overall cost of care for hypertensive patients by 23 percent.
- *Better management of arterial hypertension in a quality improvement program*: based on a program in the Mtskheta-Mtianeti region of Georgia, where the distribution of inexpensive drugs to patients with high blood pressure led to average decreases in systolic and diastolic pressure levels of 12 percent and 10 percent, respectively.
- *A team approach to educate patients in the self-management of diabetes*: based on a Diabetes Education Center in Dubna, Russia, which reduced the average length of stay for patients hospitalized with diabetes-related conditions from 33 days to 20 days, and decreased the average levels of insulin use among its patients.

- *Education and self-management for patients to recognize and prevent asthma symptoms*: based on an asthma program in Sarov, Russia that had reduced symptoms, emergency visits, hospitalization, and lost school- and workdays.

Based on the best evidence, and USAID's experiences in the region, we propose that USAID missions and the countries consider these options. The appropriateness of each program will depend on the specific country context. Wherever possible, these programs should be integrated into existing programs. We have attempted to highlight the key elements of each program, which can be adapted to the specific characteristics of each country's health system. The models are general solutions that may be more effectively applied to a different disease of particular importance in the local environment.

In spite of the fact that the burden of injuries in Eastern Europe is so high, USAID and other aid agencies have sponsored relatively few programs in injury prevention in the region. Evidence-based, cost--effective programs do exist, however. They drastically reduce deaths and suffering and are highly cost-effective, at less than $500 per DALY averted. These interventions cover both the pre-event (primary prevention) and post-event (secondary prevention) phases of injury.

Program Features	**Model Injury Programs**			
	Alcohol Abuse	**Road Traffic Injury**	**Emergency Medical Services**	**Violence Management**
Example found in EE region	Russia	Poland	Uzbekistan	Bulgaria
Intervention type	Risk factor control	Black spot treatment & speed control	Enhanced responsiveness	Facility based management
Injury type/s affected	Road traffic, violence	Road traffic	Acute injuries/trauma	Domestic violence
Relation to event timing	Pre-event and person	Pre-event and equipment	Post-event and environment	Post-event
Cost-effectiveness	Expected high	High (same as speed bump)	High per life saved	Potentially moderate to high

The proposed interventions should be framed within national plans for injury prevention. Countries should consider the following recommendations from WHO and the World Bank to develop national frameworks for injury prevention:

- ✓ Identify a lead agency in government to guide the national efforts.
- ✓ Assess the problem, policies, and institutional settings relating to injury and the capacity for injury prevention in the country.
- ✓ Prepare a national injury and violence prevention strategy and plan of action.
- ✓ Allocate financial and human resources to address the problem.
- ✓ Implement specific actions to prevent and minimize injuries, and mitigate their consequences, and evaluate the impact of these actions.
- ✓ Support the development of national capacity and international cooperation.

These guidelines will enhance implementation in countries in the E&E region in order to stop the heavy toll of injuries.

Conclusion

We recommend that USAID, other international organizations, and host governments give increased consideration to interventions that will prevent or manage NCDIs and thereby increase the healthy productive years and decrease the economic and social costs of NCDIs for the people of the E&E region.

I. Cost and Prevalence of Non-communicable Diseases and Injuries in Eastern Europe and Eurasia (E&E)

Each year, over 16 times more people in the E&E region will die as a result of non-communicable diseases and injuries (NCDIs) than from the combination of all infectious diseases, maternal and peri-natal conditions, and nutritional deficiencies.[1] Once thought to be an issue primarily involving older people in higher income countries, NCDIs are now exacting an even greater financial and social toll in other countries, particularly those in the E&E region. Policymakers around the world are beginning to recognize the burden of NCDIs.

Interest in NCDIs has recently increased as younger and younger people in low- and lower-middle-income countries are affected, creating an added burden on impoverished families, having a large impact on already overstretched healthcare systems, and shortening their active and productive years. According to a recent WHO report, people in low- and lower-middle-income countries tend to develop NCDs at younger ages, suffer longer – often with preventable complications – and die sooner than those in high-income countries.[2] Based on a composite of cases, the following two examples from the E&E region help to illustrate the broad impact that NCDs can have on entire families. The examples are composites of real people we encountered.

Vasily worked at a foundry earning enough to support his wife and two children until undiagnosed hypertension resulted in a stroke. His eldest son, Stefan, left school in order to take a low-paying job working at a night club to help his mother purchase the medications and supplies that Vasily will need as long as he lives. Stefan worries that his sister will also need to leave school to help her mother care for their father. Both are good students and the computer

Julia was working as a secretary in a foreign business, and together with her husband, they were able to maintain a middle-class lifestyle for themselves and their children. Her worsening vision, a result of poor control over her diabetes, left Julia unable to work effectively at her computer, and she now cleans office buildings for a much lower wage. Julia has already lost two toes to complications from her diabetes and worries that eventually she will be unable to work

classes that Stefan was taking would likely have allowed him to earn a better living than his parents had. Now it is unlikely that Stefan will be able to return to school.

altogether. Her husband had to sell his delivery van, in order to repay debts he incurred the last time Julia was hospitalized. Unable to afford the insulin and testing supplies needed to monitor her blood sugar, Julia will likely die prematurely, leaving her husband to care for their two children as best he can.

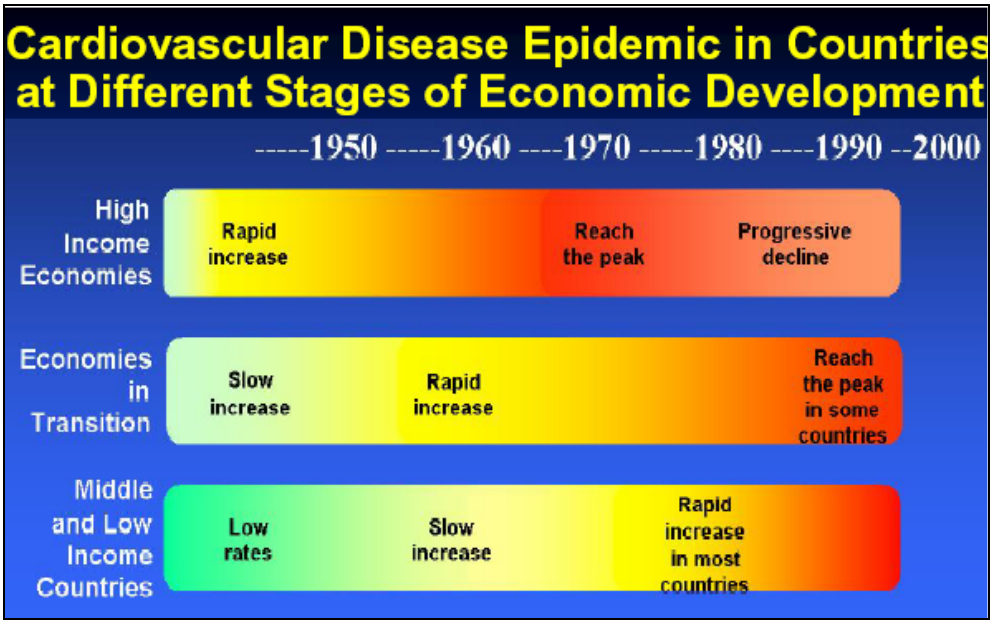
In the first section of this report, we examine the growing burden from NCDIs by reviewing available data and published reports. In order to place the E&E experience in a larger context, we also quickly examine the expanding role of NCDIs worldwide. Although the human and economic burden of NCDIs is onerous in other parts of the world, it is especially heavy in the E&E region.

Background – Growing Burden of NCDIs in the World

In the United States, it has been estimated that in 2005 almost half the population, 133 million people, had at least one non-communicable disease, and about 1 in 5 Americans had multiple non-communicable diseases.[3] These individuals were the recipients of over 80 percent of the health expenditures in the United States. Similar epidemiologic transformations from acute to non-communicable diseases are occurring in Western Europe, Japan, Australia, and other industrialized countries. Other countries are following.

There is a common misperception that this transition has not yet taken place in low- and lower-middle-income countries. However, the burden of NCDIs in low- and lower-middle income countries is progressively worsening over time. NCDIs such as heart disease, stroke, cancer, injuries, and diabetes are now the leading causes of morbidity and mortality worldwide.[4] As seen in the chart below, borrowed from a leading researcher at the Centers for Disease Control and Prevention, the impact of cardiovascular disease on economies in transition and middle- and low-income countries has been increasing rapidly while it is already on the decline in higher income countries.[5]In fact, only in sub-

Saharan Africa and some parts of East Asia and the Pacific are communicable diseases still the major contributors to the burden of disease.[6]



A recent report by the WHO focused on the need for increased investment in non-communicable disease (NCD) prevention and treatment.[7] The WHO report begins with a quote by a former director general of WHO, Lee Jong-wook, describing the importance of NCDs to the world.

> *The lives of far too many people in the world are being blighted and cut short by non-communicable diseases such as heart disease, stroke, cancer, chronic respiratory disease and diabetes. This is no longer only happening in high income countries… Globally, of the 58 million deaths in 2005, approximately 35 million will be as a result of non-communicable diseases. They are currently the major cause of death among adults in almost all countries…. This is a very serious condition, both for public health and for the societies and economies affected. Until recently, the impact and profile of non-communicable disease has generally been insufficiently appreciated…. The means of preventing and controlling most non-communicable diseases are already well- established.*

The WHO report provides substantial data to document these conclusions. For example, in the world,

- Twice as many deaths will occur from NCDs as from all infectious diseases (including HIV/AIDS, tuberculosis, and malaria), maternal and peri-natal conditions, and nutritional deficiencies combined.
- One-quarter of all deaths from NCDs occur in adults under the age of 60.
- Countries such as China, India, and the Russian Federation could lose between $200 billion and $550 billion in national income over the next 10 years simply from inappropriate attention to heart disease, stroke, and diabetes.
- Eighty percent of all heart disease, stroke, and type-2 diabetes and 40 percent of all cancers can be prevented.
- The impact on certain countries will be particularly serious. For example, estimates show that by 2015 Russia will be losing approximately 5 percent of its GDP due to inadequate treatment of NCDIs.

A book titled *A Race Against Time* makes a strong argument that women and children are as likely to suffer from NCDIs as adult men.

> *Moreover, it is not only men who suffer. A recent study points out the frequently devastating impact of CVD on women, both directly when they get sick and indirectly when their circumstances are adversely affected by the death of family members. Cardiovascular disease alone accounts for 58% of all deaths in the region. The study points out that "CVD deaths among women aged 15-34 are four times pregnancy–related deaths. Female CVD deaths in the decade after prime childbearing years are 20 times all maternal deaths in the two decades of prime childbearing." Therefore, if we are to improve the health of women and safeguard the welfare of their children, we must consider the impact of cardiovascular and other diseases.*[8]

The WHO report contains numerous examples of successful NCD interventions.

- Poland experienced a 6.7 percent annual decline in deaths from heart disease from 1991 to 2000, primarily through dietary and lifestyle changes.
- A USAID-funded program in Tula, Russia, was able to show a 70 percent success rate in controlling high blood pressure and an 85 percent reduction in hospital admissions for high blood pressure.[9]

The World Bank also recognizes the impact of NCDIs on mortality and morbidity. The "Disease Control and Prevention 2" report published by the World Bank focuses on cost-effective ways to prevent and manage diseases and injuries. The report contains several examples of cost-effective interventions for a wide variety of non-communicable diseases, such as:

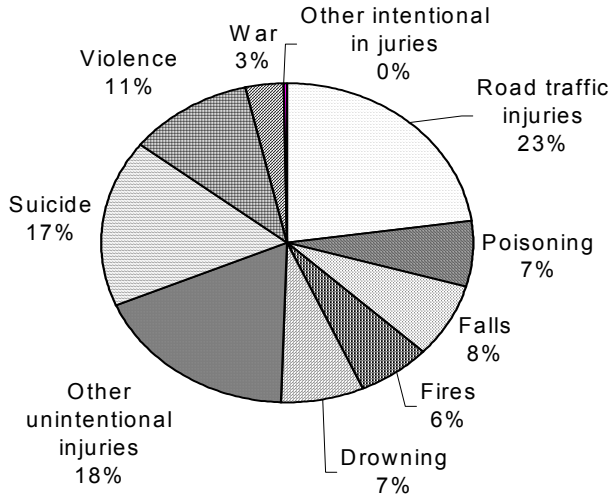
- In every region of the world, the use of aspirin and beta blockers to treat myocardial infarction costs less than US$25 per disability-adjusted life year (DALY).[10 11] Using a combination of inexpensive drugs, secondary prevention for individuals with high-risk cardiovascular disease can be typically provided for under US$300 per DALY averted.[12 13]
- Tobacco taxation is well-documented as an effective intervention in reducing smoking, especially among young people and the poor.[14]
- Glycemic control of diabetes using a combination of insulin and lifestyle changes can actually be cost-saving among individuals with poor baseline control (HbA1c above 9 percent).[15]
- Education in proper medication use for asthmatics is highlighted as a cost-effective intervention, particularly in low-income countries, where timely access to emergency care may be unavailable.[16]

The morbidity and mortality due to injuries is being recognized as a major public health and development problem. It ranks among the leading causes of death and occurs in all regions, affecting people in all age and income groups. It represents 12 percent of the global burden of disease, as measured by disability-adjusted life years. Death and disability from injury affect people at every age, both genders, and all countries. It is the third most important cause of overall mortality, and the main cause of death among 1- to 40-year-olds.[17] Injuries killed over 5 million people globally in 2000 with many more being disabled, resulting in a heavy disease burden.[18] Injuries account for one in seven healthy life years lost worldwide; and by 2020 they will account for one in five, with low- and middle-income countries bearing the brunt of this increase.[19] The economic and societal cost of injuries is growing each year.

Injuries are typically classified according to whether they are intentional or unintentional. Intentional injuries include homicide, interpersonal violence, wars, collective violence, suicide, and other forms of self-harm. Unintentional injuries are typically classified

according to the means of their occurrence, such as poisoning, burns, drowning, falls, and road traffic incidents.[20] The distribution of these injury types for global injury mortality is shown in Figure 1.

Figure1: Distribution of global injury mortality by cause
Source: WHO Global Burden of Disease Project, 2002



Worldwide, intentional injuries account for almost the same number of DALYs lost by sexually transmitted diseases and HIV infection combined or tuberculosis.[19] Unintentional injuries caused as many DALYs lost as by diarrhea.[19] Injuries contribute 4,198 DALYs per 100,000 people in low- and middle-income countries, while high-income countries have 1,403 DALYs per 100,000 people; this 3-1 ratio is worth noting for the E&E region.

Of all injury-related causes of deaths, road traffic injuries and violence are high profile challenges.[21,22] Every year, over 1.5 million people die of preventable acts of violence, including 800,000 suicides and 500,000 homicides.[22,23] The first WHO World Report on Violence and Health was released in 2001 with a call by Nelson Mandela to place injuries in the forefront of public health efforts. The report highlighted the finding that worldwide violence is among the leading causes of death for people aged 15-44 years, accounting for 14 percent of deaths in males and 7 percent in females.[22, 24] In 2000, the rate of violence-related deaths in all low- and middle-income countries was more than twice that in high-income countries. It is estimated that worldwide in 2000 there were 57,000 homicides among children under 15 years of age, with those aged 0-4 years at greatest

risk. Among those aged 15-44 years, self-inflicted injuries are the fourth leading cause of death and the sixth leading cause of disability.[24] Besides the toll of human misery, violence exacts substantial social and economic costs. According to the *Proceedings of the 7th World Conference on Injury Prevention and Safety Promotion*, some countries in the world spend more than 4 percent of their gross domestic product (GDP) responding to violence-related injuries.

Road traffic injury is another growing public health issue that is disproportionately affecting vulnerable groups, including the poor. More than half the people killed in traffic crashes are young adults aged between 15 and 44 years -- often the breadwinners of the family.[21]According to WHO, deaths from road traffic injuries account for nearly 25 percent of all deaths from injuries, and are ranked among the top 15 causes of all deaths. They are the second leading cause of death for ages 5-29 years, and third leading cause for ages 30-44 years.[21]. In economic terms, the direct annual cost of global road crashes has been estimated at US$518 billion. The cost in low- and middle-income countries is estimated at US$65 billion,[25] which is 1–2 percent of their gross national product (GNP) and is more than the total development aid received by these countries. Road traffic injuries rank second in terms of leading causes of burden of disease among males of age group 5-44 years in low- and middle- income countries, with cardiovascular disease as the No. 1 cause.[18, 19, 21]

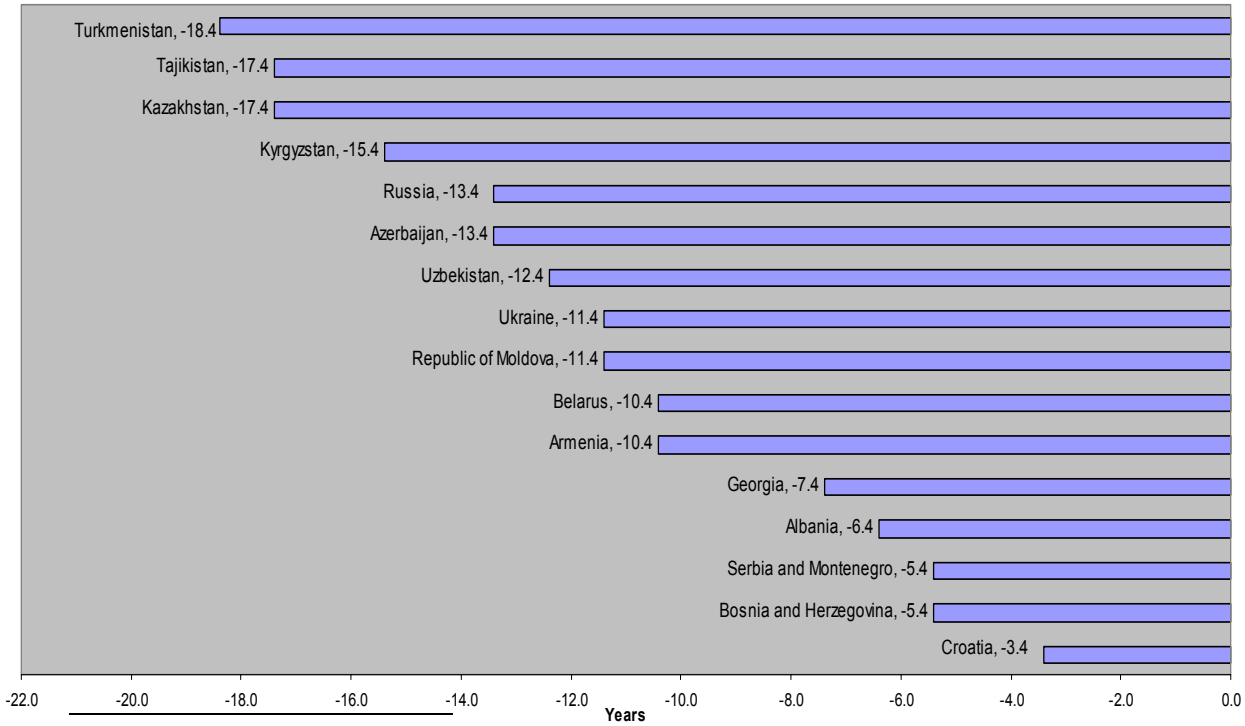
The first joint report by WHO and the World Bank on road traffic injury prevention was released on World Health Day 2004 and has been followed by a United Nations General Assembly resolution calling for safer roads globally. The WHO-World Bank report documented that[26] in 2002, the overall global road traffic injury mortality rate was 19 per 100,000 population; the vast majority – 90 percent of road traffic deaths - were in low- and middle-income countries. In many low- and middle-income countries, the burden of traffic-related injuries represents between 30percent and 86 percent of all trauma admissions.[27,28] The total number of road traffic deaths and injuries worldwide is estimated to rise by some 65 percent between 2000 and 2020[29] and by as much as 80 percent in low- and middle-income countries. By 2020, road injuries are likely to be the third-leading cause of global DALYs lost.[30]

NCDIs in Eastern Europe and Eurasia (E&E)

In this section we focus on the impact of NCDIs in 16 countries of the E&E region. We will demonstrate that these countries, Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Croatia, Georgia, Kazakhstan, Kyrgyzstan, Republic of Moldova, Russia, Serbia and Montenegro*, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan, pay a heavy toll in lives and productive years of life lost due to NCDIs. The situation becomes quite evident when the data from the countries of the E&E region are compared to data from the 15 original countries of the European Union (EU-15). Data from the 2005 European Health Report[31] and the European Health For All Database (HFA-DB)[32] are used to make the comparisons.

Life expectancy at birth is perhaps the most commonly used indicator of health status. ***Figure 2*** illustrates that there is a deficit in all of the E&E countries relative to the average life expectancy in the EU-15 countries. There is an 11-year difference between the E&E region average of 67.2 years and the EU-15 average of 78.4 years. This deficit ranges from three years in Croatia to 18 years in Turkmenistan. Notably, 11 of the 16 E&E countries show a deficit of 10 or more years compared to the EU-15.

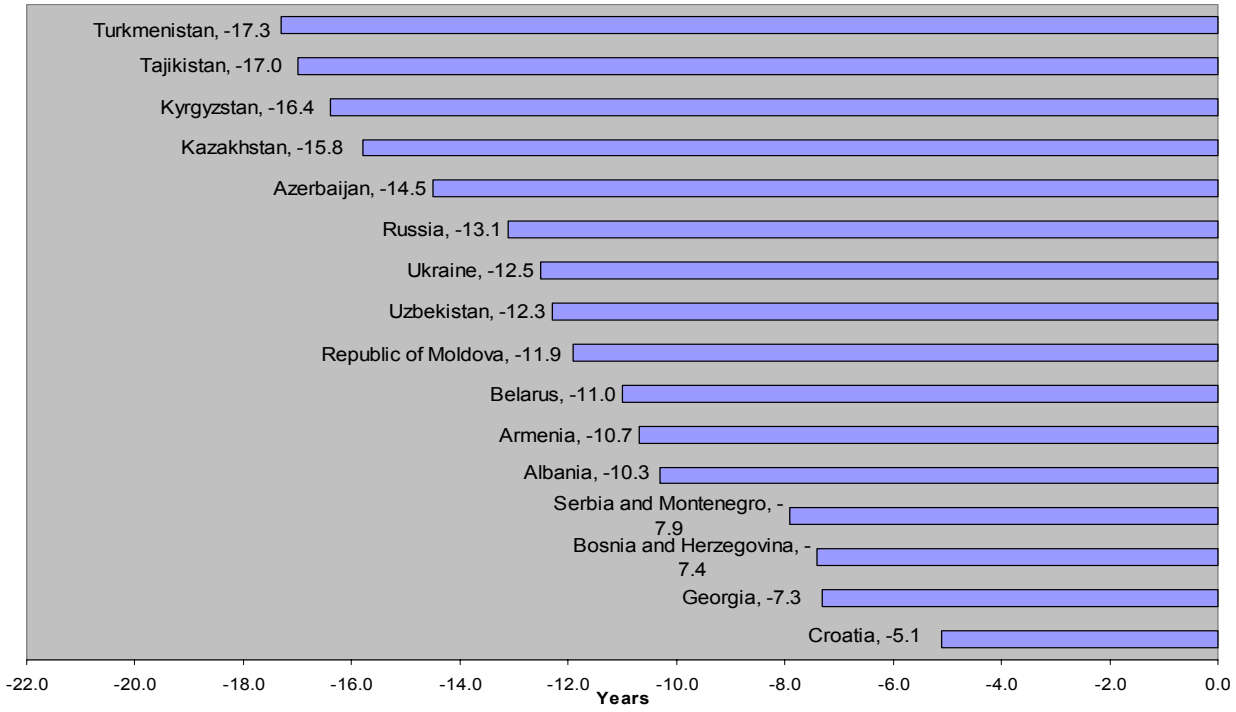
Figure 2: Reductions In Life Expectancy at Birth Compared to the EU-15 (World Health Report, 2003)



* Serbia and Montenegro were a single country when this data was collected.

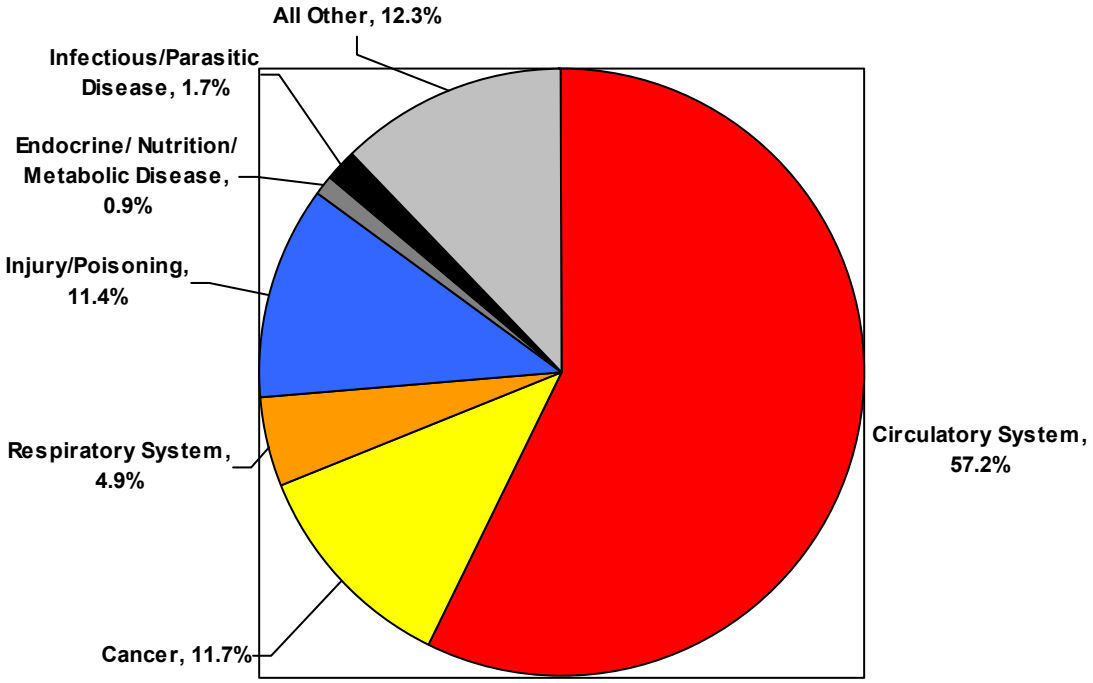
A refinement of the life expectancy indicator incorporates morbidity into the calculation. Healthy life expectancy (HALE) reduces overall life expectancy by the number of years lived in less-than-full health due to disease and/or injury. In the EU-15 the average healthy life expectancy is 71.7 years. ***Figure 3*** shows that 12 of the 16 E&E countries have a deficit of 10 years or more in healthy life expectancy compared to the EU average. The 16 countries in the E&E region have an average of 11.9 fewer years of healthy life than the EU-15. This shorter life expectancy impacts their economic productivity since it reduces the number of years that a person can work. In a country such as the Russian Federation, the economic impact of reduced productivity due to premature death can be as large as $500 billion over a 10-year period.

Figure 3: Reductions In Healthy Life Expectancy Compared to the EU-15
(World Health Report, 2003)



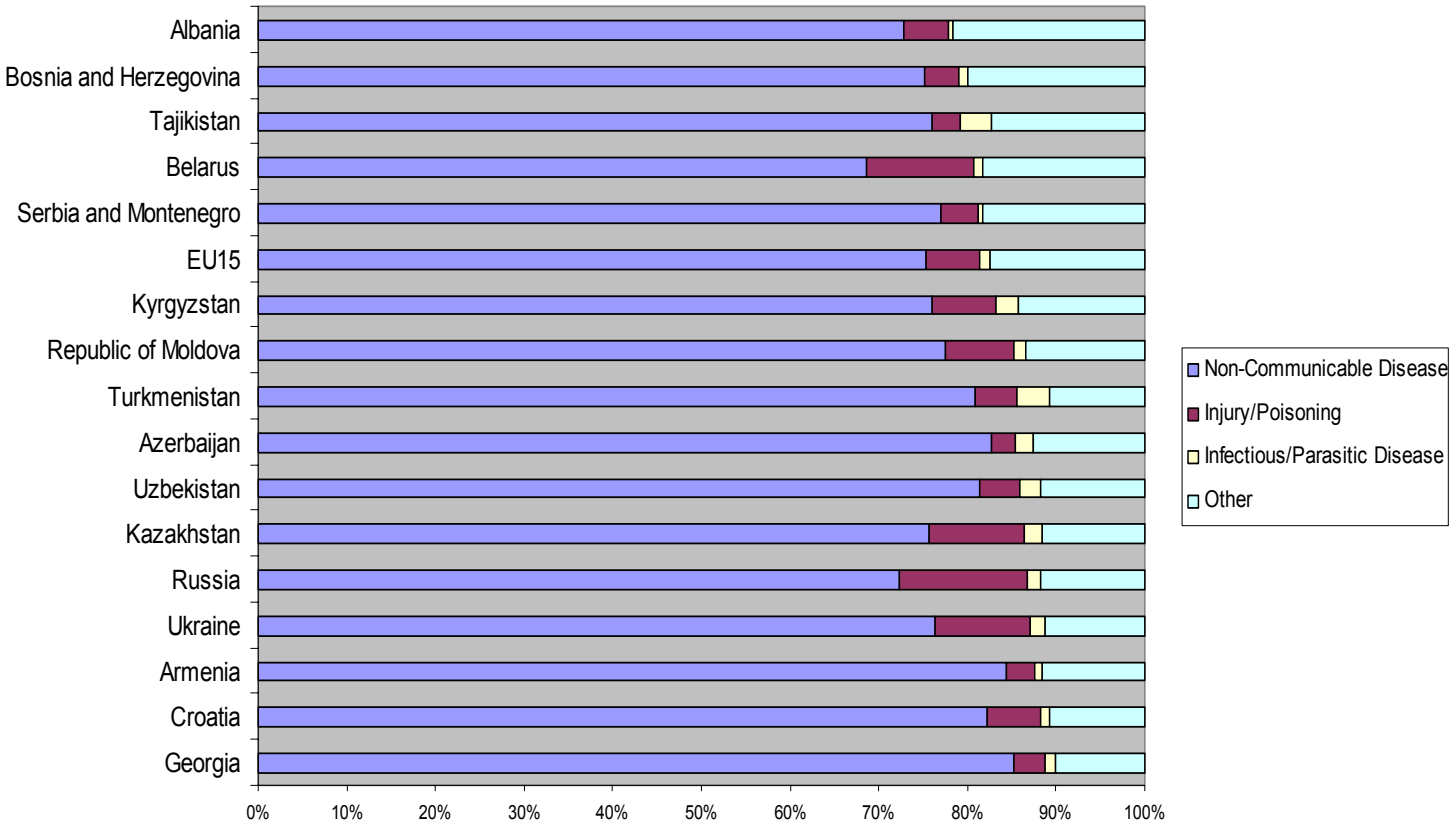
We then turn our attention to the factors that could explain these very large differences. We find that NCDIs play a major role in the reductions in life expectancy and healthy life expectancy between countries in the EU-15 and those in the E&E region. NCDIs account for over 85 percent of all deaths in the E&E region, with heart-related disorders, cancers, and injuries being the most common causes of mortality (***Figure 4***). Cardiovascular disease alone is responsible for almost 60 percent of the deaths in this region.[33]

Figure 4: Causes of Deaths in E&E Region (World Health Report, 2003)



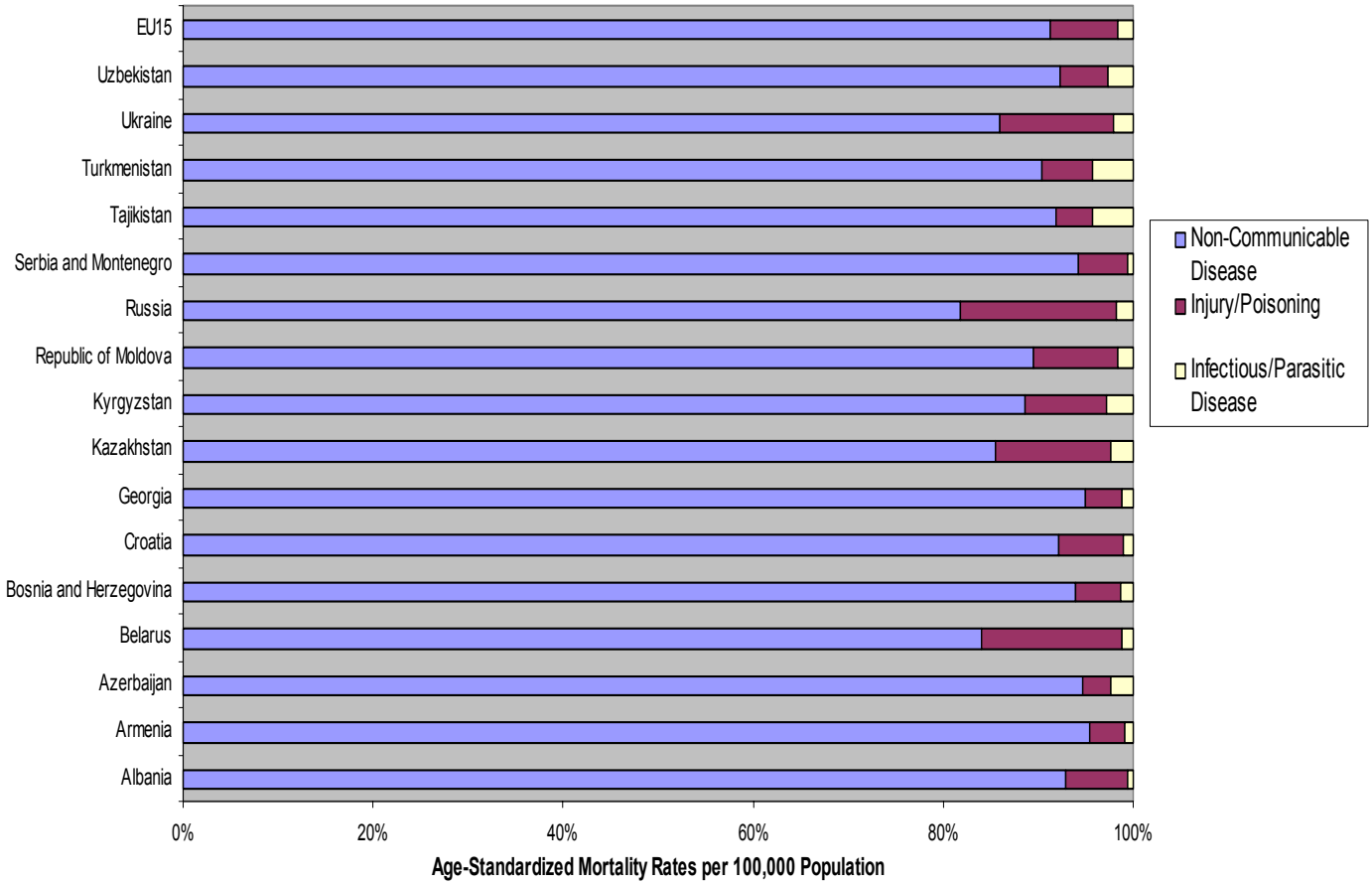
We recognize that there are significant differences in the causes of death among the 16 countries in the E&E region. Therefore, we examined the causes of mortality within each individual country. ***Figure 5*** illustrates that NCDIs are responsible for at least two-thirds of all deaths in all 16 countries. In 10 of the 16 countries, 80 percent or more of deaths are due to NCDIs.

Figure 5: Percentage of Deaths by Cause (World Health Report, 2003)



Epidemiologists will argue correctly that it is necessary to standardize for age differences. We therefore included age-standardized mortality rates. ***Figure 6*** clearly shows that NCDIs are responsible for the vast majority of deaths in the E&E region.[34] The age-standardized mortality rate for NCDIs in the EU-15 is 519.7 deaths per 100,000 people, while in the E&E-16 it is 995.7 deaths per 100,000 people. The overall death rate in the E&E-16 is nearly double that of the EU-15. In comparison, the age-standardized mortality rate for NCDs in the EU-15 is 481.6 deaths per 100,000 people, while in the E&E region, it is 912.7 deaths per 100,000 people. For NCDs, the death rate in the E&E region is more than double the death rate in the EU-15.

Figure 6: Age-Standardized Mortality Rates for Non-Communicable Diseases, Injury and Poisoning, and Infectious/Parasitic Diseases (World Health Report, 2003)



The level of adult mortality is an important indicator for assessing the mortality pattern of a population. It is also the age group with the greatest economic productivity. The adult mortality rate is the probability that a 15-year-old person will die before reaching his or her 60th birthday. We have already established that NCDIs are the leading cause of death in the E&E region. It is a misconception that NCDIs impact only old people and do not affect the working age population. However, as shown in ***Figure 7***, the percentage of the population above 15 years of age in the Russian Federation that will die before reaching his or her 60th birthday is 33 percent. These data dispel the myth that non-communicable diseases mainly affect old people in the E&E region.

Figure 7: Percentage of Population Above 15 Years of Age Who Die Before Age 60 (Adult Mortality Rate) (World Health Report, 2003)

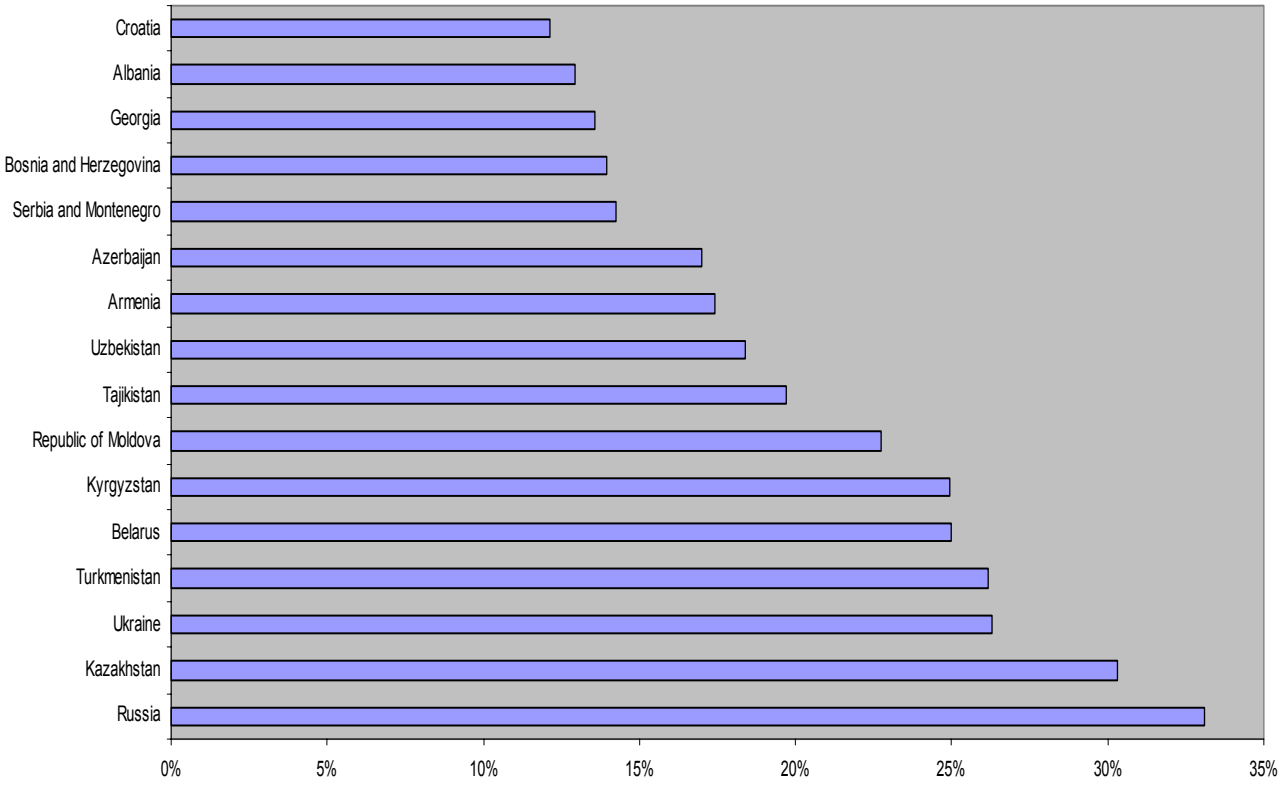
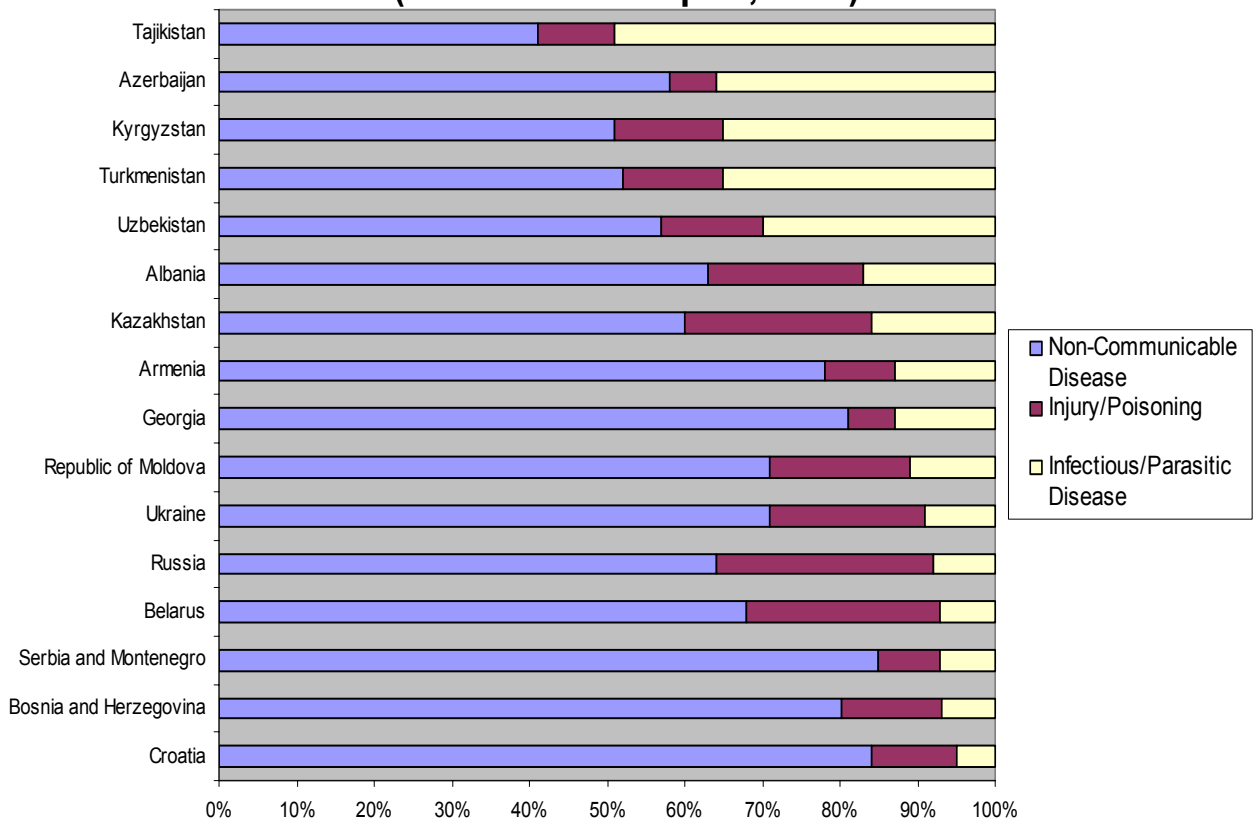


Figure 8 illustrates that NCDIs are the reason for shorter life spans in the E&E region. Croatia has the highest percentage of lives lost due to NCDIs – 95 percent. Tajikistan has the lowest, but even in Tajikistan over half of the years of life lost are due to NCDIs. On average, NCDIs make up over 80 percent of the years of life lost in the countries of the E&E region.

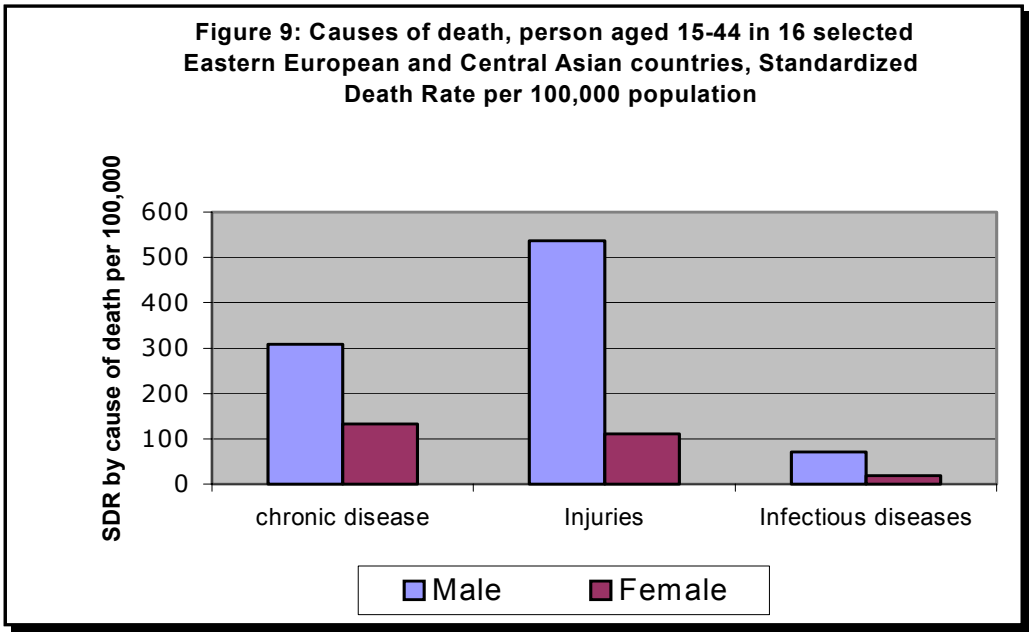
Figure 8: Percent of Years of Life Lost by Cause (World Health Report, 2003)



NCDIs include a broad range of non-communicable diseases and injuries. It is therefore important to examine the specific chronic conditions and injuries that are responsible. Ischemic heart disease and cerebrovascular disease ("stroke") are the two leading causes of both death and disability adjusted life years (DALYs) in the E&E countries. The next highest causes of death are poisonings, lower respiratory infections, hypertension, peri-natal conditions, and diarrheal diseases. For DALYs, the order is slightly different – after ischemic heart disease and cerebrovascular disease are inflammatory heart diseases, peri-natal conditions, lower respiratory diseases, hypertensive heart disease, poisonings, and diarrheal diseases.

Injuries are among the leading causes of morbidity and mortality in Europe and are responsible for a sizable economic drain on the countries in this region. Of the 5 million deaths from injury worldwide in 2002, 790,000 were in the WHO European Region (EURO).[35,36,37] Every day, injuries kill over 2,000 people, put 60,000 in hospitals, and necessitate outpatient emergency treatment for 600,000 in the region.[20] These rank third amongst the region's major killers, after cardiovascular diseases and lung cancer. Overall injuries cause 9 percent of deaths and 14 percent of ill health in EURO.[20, 36] The annual healthcare cost of treating patients of injuries who subsequently die is estimated at about $US1.3-7.6 billion and that of non-fatal injuries is about $US 101-368 billion. [20,38]

Once thought to be an issue among higher-income countries, injuries are exacting an ever-greater toll on middle-income and poor countries, creating an added burden on impoverished families and overstretched healthcare systems, and robbing people of active and productive years. A recent paper points out that this is the case in the European Region. Most of the burden falls on low- and middle-income countries that since the 1990s have undergone great changes brought about by transition to market-style economies; further evidence is being explored to demonstrate any causal associations.[17,39,40] These developments have been associated with increases in violence and unintentional injuries.[40] Injuries account for major causes of East-West gap in mortality at all ages in Europe, with death rates approximately 60 percent higher in Central and Eastern Europe compared to Western Europe.[41]



As can be seen from ***Figure 9***, in Eastern European countries, the standardized death rate* among males in the age group of 15–44 years is higher due to injuries compared to chronic and other infectious diseases.[21] People in the middle-income****countries in the region are 3 times more likely to die from injuries than those in the higher-income ***countries of the region.[20] The situation becomes very evident when data from countries in Eastern Europe are compared to data from the 15 original countries in the European Union. Compared to the EU-15, mortality rates from injuries, poisoning, and violence are nearly 2.5 times higher in Central and Eastern Europe.[19] Compared to the rest of the world, injury-related mortality is 5 times higher in Europe.[42] An analysis of the data from

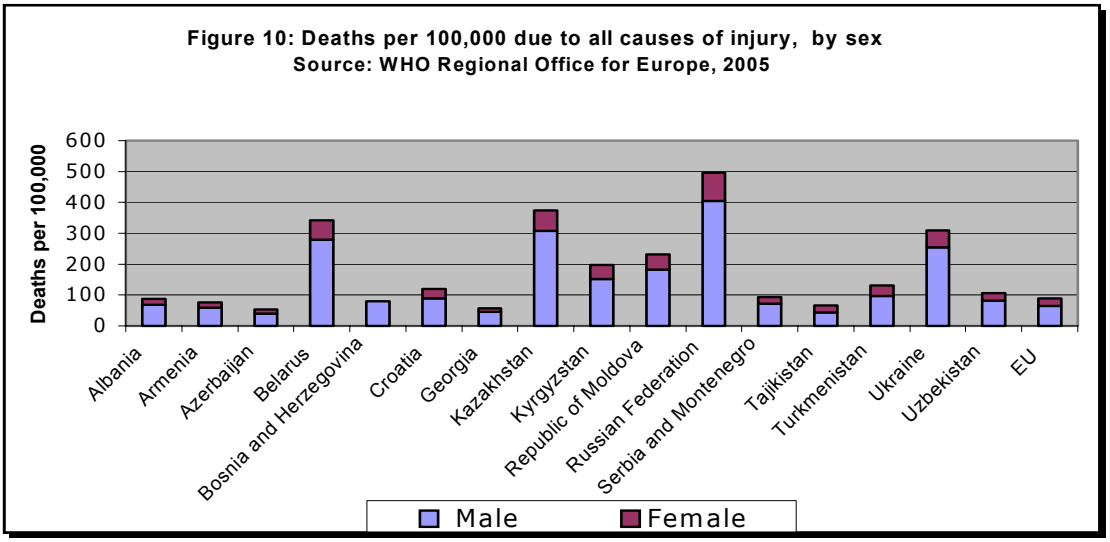
* Standardized death rates: It is a weighted average of the age-specific mortality rates per 100,000 persons, where the weights are the proportions of persons in the corresponding age groups of the WHO standard population.

** Low- and middle-income countries of Europe include Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Poland, Republic of Moldova, Romania, Russian Federation, Serbia and Montenegro, Slovakia, Tajikistan, Turkey, Turkmenistan, Ukraine, and Uzbekistan.

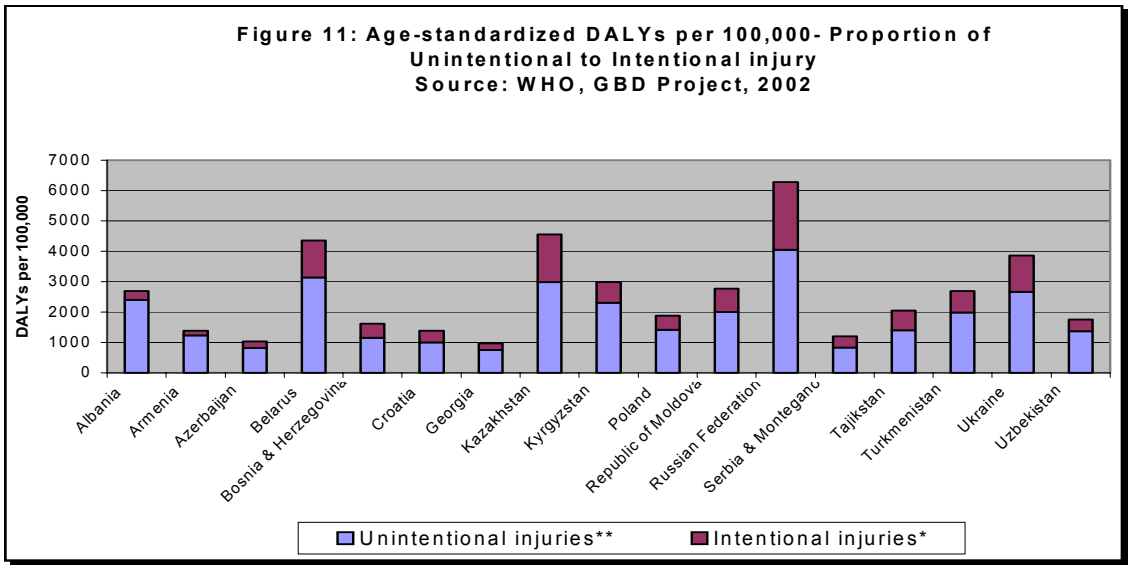
*** High-income countries of Europe include Andorra, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Luxembourg, Malta, Monaco, Netherlands, Norway, Portugal, San Marino, Slovenia, Spain, Sweden, Switzerland, and United Kingdom.

the 2005 European Health Report[43] and the European Health For All Database (HFA-DB)[44]demonstrates that 10 out of 16 Eastern European countries have higher standardized death rates (SDR) due to injuries (***Figure 10***).

The SDR in the Russian Federation, Belarus, and Ukraine due to injuries is almost 3 times that of the EU. There are substantial differences in mortality rates from all causes of injury by gender, and mortality rates are consistently higher in males than females[20] (***Figure 10***).

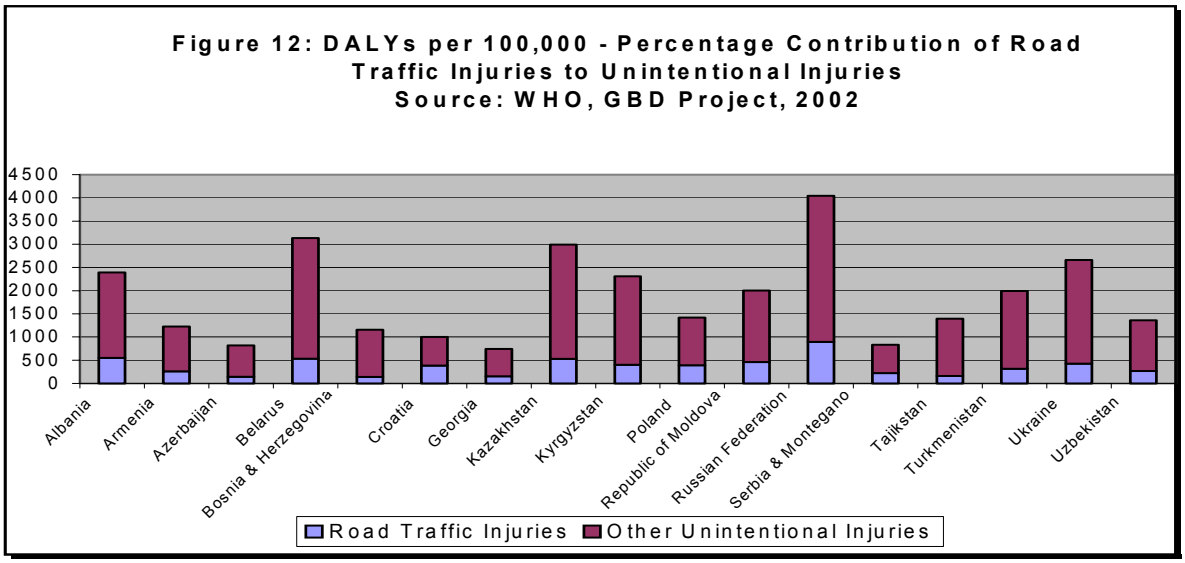


The public health importance of injuries becomes more apparent when DALYs rather than deaths are considered. Analysis of data from WHO (2004),[37] shows that the burden due to unintentional injuries, such as road-traffic injuries, is much higher in the E&E countries compared to intentional injuries such as violence (***Figure 11***). The Russian Federation has the highest death rate due to injuries, followed by Belarus, Ukraine, and Kazakhstan. As can be seen from ***Figure 11***, years lost to disability or premature death due to unintentional injuries range from as high as 4,043 per 100,000 in Russia to 747 per 100,000 in Georgia.



The World Bank recently completed a report on how injuries are affecting the health status and the economy of the Russian Federation. [45] Russia ranks No. 1 in the world for road crashes, with 12 crashes for every 10,000 vehicles, and the traffic mortality ratio is twice that of other G-8 countries. By 2015, Russia will be losing 5 percent of its GDP due to inadequate treatment of injuries. If Russia implements preventive policies that reduce deaths from injuries to the same level as that found in Western European countries (the EU-15) today, Russia would see socioeconomic benefits equivalent to approximately 30 percent of the 2002 Russian GDP. Along with Russia, the other 15 countries in the region pay a heavy toll in lives and productive years of life lost due to injuries (***Figure 11***).

The upward trend in death and disability in Eastern European countries is thought to be due to poorly managed societal transition to market economies, worsening inequalities in wealth, higher unemployment, reduced social capital, increased availability of alcohol, and poor regulatory and enforcement mechanisms.[39] For example, rapid increase in motorized transport, without concomitant changes in development of regulation and infrastructure, has been associated with increased rates of road traffic injuries in these countries.[36,39,46] Next to the high number of lives lost, about 2.4 million people per year are injured in road traffic crashes.[47] Road traffic injury is the sixth leading cause of DALY losses in Eastern Europe compared to Western Europe where it is ninth.[18, 21]



As shown in ***Figure 12***, road traffic injuries contribute a significant percentage to overall DALYs due to all causes of unintentional injuries, ranging from 12 percent in Tajikistan to 39 percent in Croatia. A recent review by the Transport Research Laboratory in the United Kingdom found that, in countries with economies in transition in Central and Eastern Europe, the average annual cost of road crashes was about 1.5 percent of gross national product, totaling about US$9.9 billion.[48]

Risk factors such as alcohol and drug use abound in the E&E region.[49] Alcohol consumption is responsible for 40–60 percent of all injury deaths. [20,50] Children may also be victims of alcohol misuse, either from perpetrators of violence or from parents too impaired to provide supervision. Middle-income countries in the European region have the highest per-head consumption of alcohol in the world, with the largest share of unrecorded consumption and arguably the most hazardous drinking patterns.[36,51] Much of the excess adult mortality in the Commonwealth of Independent States and other Eastern countries in the region has been attributed to alcohol ingestion.[52,53] In these countries, binge drinking has led to premature adult mortality from injuries, ranging from poisoning due to alcohol intoxication, road traffic incidents, violence, and cardiovascular mortality.[46,54] If rates of mortality from these causes in childhood were reduced to the average for the European Union, depending upon age, up to 80 percent of the difference in total mortality in childhood between Eastern and Western Europe would be eliminated, and nearly 32,000 deaths in the age group 1-19 years (31 percent of all deaths at this

age) would be prevented each year.[19]

While there is a diverse range of specific factors associated with injuries, poverty and inequality stand out as being important general determinants. Injuries are linked to poverty and inequality in two ways: those in absolute and relative poverty are at increased risk through exposure to hazards; and those who suffer injuries and disability require medical and rehabilitation care that they cannot afford, leading to the disposal of essential assets. Furthermore, those disabled or killed represent lost income generation for the affected families and households.[22]

II. NCDI Activity in the E&E Region

The burden of disease due to NCDIs has not elicited a comprehensive public health response in many countries of Eastern Europe, even though NCDIs have long been a significant problem in the region Policymakers and healthcare professionals are just beginning to appreciate the burden due to NCDIs. Some programs have been implemented, however, and existing efforts in the region are reviewed in this section.

Agencies Involved

In addition to USAID, many other countries, foundations, and international aid agencies are actively pursuing programs to improve health conditions in the E&E region. The European Union is a substantial donor in the Central and Eastern Europe (CEE) region. Germany and Japan are also substantial bilateral donors in Eurasia but focus most of their resources on areas outside of health. Donors such as Britain's Department for International Development (DFID) spend a substantial part of their health funding on supporting the Millennium Development Goals. The European Commission focuses much of its health assistance on TB, HIV/AIDS, and malaria, while also funding programs to improve reproductive health and human rights.

Surprisingly, none of these international donors is focusing substantial resources on preventing or managing NCDIs, in spite of the high mortality, morbidity, social, and

economic costs of NCDIs. In comparison to funds allocated for TB, HIV/AIDS, and malaria, the funding from international donors for programs that focus on NCDIs is quite limited. Currently, it appears that USAID is the major funder of NCD programs in the E&E region.

Our review of USAID funding and projects reveals that USAID allocates about 10 percent of its funding to health-related programs.[55] Of health-related spending, about 30 percent is targeted to fighting infectious diseases, with an explicit focus on HIV/AIDS and tuberculosis. A substantial proportion of spending is also targeted to health systems capacity and maternal and child health. Approximately 1 percent of health spending is targeted specifically to NCDs, although a number of other interventions that focus on areas that improve quality of healthcare and healthcare capacity would clearly benefit persons with NCDs.

NCD Programs

Our scan of programs in the E&E region suggests that USAID has and continues to make important investments in preventing and treating NCDs, though these investments are modest compared to its allocations for other programs. A matrix of USAID-funded programs in the region over the past 14 years, located in ***Annex 1***, reveals that almost 100 projects have targeted NCDs in one way or another. While many of these programs are small components of much larger efforts for improving health systems capacity and are implemented by PHRplus and ZdravPlus; there have been many successful stand-alone programs, as well. ***Annex 1*** includes several aspects of each program, including location, dates, disease(s) addressed, program description, and outcomes. This material enabled us to easily compare similar programs and to make an informed assessment of which types of programs consistently showed promising results.

Four of the most successful programs are summarized in ***Annex 2***. We focused on identifying programs that were successful in four areas: (1) low cost per person, (2) low cost per DALY, (3) significant improvement in health outcomes, (4) sustained once initial funding ended. There are four programs:

- A cardiovascular disease program in Tula, Russia, decreased hospital hypertension treatment costs by 41 percent, primary care hypertension management costs by 39 percent, and the overall cost of care for hypertensive patients by 23 percent.
- In the Mtskheta-Mtianeti region of Georgia, the distribution of inexpensive drugs to patients with high blood pressure led to average decreases in systolic and diastolic pressure levels of 12 percent and 10 percent, respectively.
- A Diabetes Education Center in Dubna, Russia, reduced the average length of stay for patients hospitalized with diabetes-related conditions from 33 days to 20 days, and decreased the average levels of insulin use among its patients.
- Patients who participated in an asthma program in Sarov, Russia, had fewer symptoms, emergency visits, hospitalization, and lost school- and workdays.

Injury Prevention Programs

Traditionally, injuries have been regarded as unavoidable "accidents." Within the last few decades, however, with better understanding of the nature of injuries, these are viewed as largely preventable events.[18] The scale and extent of this problem have not been fully appreciated either within the E&E region or more broadly in the European or global community.[41] As a result, there are relatively few examples of successful programs in injury prevention in the E&E region.

Research shows that adopting a broader public health approach can significantly reduce the toll of injuries and violence on health. Such an approach involves understanding the burden and risks, finding out what works, and then implementing successful interventions on a broader scale.[20] The growing acceptance of injuries as a preventable public health problem has led to the initiation of various programs and the development of preventive strategies in the field of road safety and violence. Information on many such programs already being implemented in the E&E region has been collected and is summarized below. Details for various programs are presented in ***Annex 3***. The methods for reviewing the data sources and literature for injuries are provided in ***Annex 4***. A detailed description and analysis of these programs are presented in ***Annex 5***.

Road Safety

Numerous programs have been conducted to convince drivers and passengers of the importance of safety belt usage. Examples of such programs include *Seat Belt Campaign* in Hungary,[56] *Seat Belt Use* in Russian Federation,[57] and *Buckle up your kid!*[58] in Poland. In Poland, front seat belt usage rose from 37 percent before the introduction of the law to 95 percent, and within a short period there was 35 percent reduction in hospital admissions for road traffic injuries.[21] In the Russian Federation an increase in rate was seen in wearing seatbelts in urban areas from 3.8 percent to 19.9 percent, and on rural roads from 26.8 percent to 55.8 percent. Programs have been conducted to prevent crashes and loss of life at "black spots" - locations with high crash rates by improving their visibility in poor weather conditions, during day and night. *Black Spot Treatment in Poland,*[59] *Black Spot Signing in Poland,*[60] and *Black Spot Improvements in Romania*[61] are examples of such programs (see ***Annex 3***). In Poland, the number of crashes at the spots decreased by 35 percent, accompanied by a 23 percent reduction in the number killed, and by 28 percent fewer injuries.[60]

Education-based programs have also been conducted in the region to build awareness among the public and in particular among children, their parents, and youth. Such programs include *Safety For All,*[62] *Cool head in helmet (2005),*[63] and *Don't Get Mad Campaign*[64] in Poland; and *Junior Bike (2004),*[65] and *Improvement of Road Signalization*[66] in Romania. These programs have been successful and as a result the Ministry of Education in Poland has integrated the program into the school system. It was determined that campaigns aiming to change behavior must be targeted on a specific type of conduct and supported by increased enforcement.[64]

Programs have also been conducted to train professional drivers such as company and ambulance drivers, and provide information on vehicles and road safety. Examples of such programs include *Safety of HGV*[67] and *Safe Fleet Guidelines*[68] in Poland; and *Training for Ambulance Drivers*[69] in Hungary. The *Multi-Country Transport Program* (MCTP),[70] is one of the European Union's initiatives to develop a safer and more efficient transport system in Central European countries. This program has trained more than 100 ambulance drivers from 50 settlements in 10 countries. As a result of these programs,

"good practice" guidelines on occupational road safety, with an implementation and communications strategy, have been produced and launched in 2006.[68]

Pre-hospital care

Programs have been initiated in the E&E region to improve pre-hospital-care facilities and to do situational assessments to gain a deeper understanding of the operations of the emergency medical system. Examples of such programs in Poland include *Situational Assessment of Rescue Services*[71] and *Emergency Preparedness and Response*[72] . Findings indicated that though the sectors involved in rescue services were well-equipped and displayed high experience in conducting life-saving procedures, there was a need to deal with the problem of inefficient coordination among the individual subdivisions of the rescue system on the scene of crash. As a result of these findings, subsequent phases of the projects were planned to implement interventions to improve coordination between participating subdivisions. A few programs have also been conducted to improve the emergency response system, by promoting donation of modern ambulances, their effective dispatch, and use. One such program is *AIHA Uzbekistan / Georgia Partnership* in Tashkent, Uzbekistan.[73] As a result of this program, there was a significant drop in pre-hospital mortality.

Alcohol and Substance Abuse

Many multidisciplinary programs focusing on prevention, treatment, and aftercare to deal with problems of alcohol and substance abuse have been undertaken in countries like Poland, Russia, Croatia, and Belarus. Some educational community based initiatives have been introduced in schools, mass media, and those targeted at young drivers to limit alcohol-related problems and to raise awareness about the importance of safe driving. Training courses and a series of recommendations have also been formulated as part of such programs for healthcare providers to treat and prevent alcoholism. These were reported to have changed community attitudes about treating alcoholism as a disease that affects not only the alcoholic, but also his/her family. Examples of such programs include *No to Alcoholism & Drug Addiction (1994)*[74] in Moscow and *LaCrosse Wisconsin Partnership (1992-1999)*[75] in Russia. *Project Northland* (2004)[76] initiated in

Croatia was implemented at large scale and involved around 1,300 students. These programs have been successful, and one of them had an important policy outcome: alcohol sales in liquor stores were restricted after 9 p.m. Another education-based program that resulted in significant increase in health knowledge and greater utilization of healthcare facilities is the *Health Partnerships* program in Armenia.[77]

Domestic Violence

Through educational radio shows, TV shows, and conferences, projects have been set up to raise awareness and influence community attitudes relating to childcare, children's rights, women's rights, child abuse and violence in the family. One such project is *Child protection*[78] running in Croatia since 1997; as part of this program, experts discuss on radio shows various topics related to the upbringing of children and youngsters. Care centers, which provide a variety of services including shelter, have also been established for women victims of violence. Examples of such centers in Bulgaria are the *Nadja Center* and *Open Door Center* , which were established under the programs *Violence Against Women - Prevention & Care* and *Support Services for Victims of Domestic Violence.*[79,80] Such programs have shown a significant increase in the number of women who use these centers. For example, at Nadja Center, there were 960 help-line consultations in 1997, as compared to 26 in 1996. For the last two years more than 400 women have been successfully treated in the *Open Door Center* in Pleven; 87 percent of them were victims of psychological violence, 47 percent of physical violence, and 10 percent of sexual abuse.[80] These centers have not only succeeded in providing shelter to victims of violence but have also established a vision of the way help can be effectively provided to women. They have the potential to bring about change in social attitudes, policies, and practices in respect to the issue of violence against women. As additional outputs of such programs, many have been in progressing toward the prevention of domestic violence in schools.

As seen from the review above, bilateral (such as USAID) and international organizations have invested over the past 15 years some, albeit small, resources in pilot programs designed to prevent and treat injuries and violence in Eastern Europe. These programs have focused on injury prevention and behavioral change. Clinical outcomes have improved, and treatment costs have been reduced in most programs. These programs

have also served as a basis for expanded and sustained programs. Perhaps more important is that these programs have either been incorporated, or have the potential for integration, into the country's healthcare system. The programs are therefore enhancing national health system development rather than creating parallel programs.

III. Model Interventions

In this section we identify specific model programs that USAID missions and countries can consider to prevent or manage NCDIs. Many of the programs described focus on a specific non-communicable disease or injury but most can, with minimal effort, be modified to deal with other non-communicable diseases or other injuries.

NCD Intervention Analysis

Methodology

Based on our review of the literature, and most importantly, evidence of successful implementation in the E&E region, we are recommending programs that we believe provide reasonable models and have sufficient foundations to address the following issues: cardiovascular disease, health service quality, diabetes, asthma, and tobacco consumption. Each of these programs addresses important sources of mortality and morbidity in the region. While cancer and mental illness are considerable sources of significant disability in the region, and interventions in these areas have been implemented in the past, we could not identify any low-cost, cost effective programs to suggest for widespread replication. Although we could not identify any tobacco taxation programs that have operated in the E&E region for sufficient time to generate reliable data, we feel that the overwhelming support in the literature merits its inclusion. Also, the existence of several attempts in the region to curb smoking, and the successful examples from other parts of the world, justifies the inclusion of a tobacco program.

Injury Intervention Analysis

Analysis of interventions in the field of injury prevention begins with Haddon's basic principles; it can then integrate more generic criteria for evaluation such as costs, effectiveness, and cost-effectiveness. The public health community generally retained the popular notion that "accidents" were random and uncontrollable until the 1960s when William Haddon Jr. established a well-developed framework for the science of injury prevention.[81] Haddon combined modern epidemiologic concepts of primary, secondary, and tertiary prevention with an engineering recognition that energy interchange was an essential agent of injury harm.[82] The resulting 9-cell matrix is known as the Haddon matrix and classifies event timing (Pre-event/Event/Post-Event) by event factors (Persons/Equipment/Environment). The Haddon matrix as applied to road traffic (transport) injuries is reproduced in Table 1. The contributions of Haddon are credited with bringing maturity to the interdisciplinary field of injury control by opening a conduit for discourse between those focused on behavioral change and those focused on environmental modification.[83] Haddon's work also indicates the important role of post-injury conditions in ameliorating the consequences of injury.

Table 1: The Haddon Matrix as applied to transport injuries.
(Entries here are illustrative)

	Personal	***Equipment***	***Environment***
Pre Event	Avoid alcohol consumption Obey traffic laws	Daytime headlamps Good tires and brakes	Clear road signs and signals Traffic laws enforced for all motorists
Event	Use helmet/restraints Maintain physical fitness, Exercise bone strength	Good quality helmet, restraints, protective gear	Pedestrian crossings maintained Roadways clear of obstructions Energy-absorbing guardrails
Post-Event	Avoid smoking and lung complications	First aid kit Emergency radio	Emergency services Trauma care Rehabilitation services Disability insurance
Sources: (Barss, Smith et al. 1998; Ghaffar 2000)			

Cost-Effectiveness Analysis[****]

Given the limited data on the costs, cost-effectiveness, and economic benefits of interventions to prevent unintentional injuries in the E&E region, the economic evaluation of interventions and the measurement of the economic costs of injuries should be a high research priority. Some data are available from high-income countries (HICs) on the costs, and in particular the net economic benefits, of interventions for road traffic injuries, and a body of evidence suggests that many of the interventions designed to provide safer roads and vehicles and to improve driver behavior have clear net economic benefits.[84] Some data are also starting to emerge from HICs with respect to the cost-effectiveness of fall-related injury prevention programs. Data on the costs and the cost-effectiveness of interventions to prevent poisonings, burns, or drowning is limited, especially in the E&E region. For this reason the analysis has to look outside the E&E region.

The most recent model of the cost-effectiveness of potential interventions to prevent unintentional injuries using available information has been done as part of the Disease Control Priorities Project. [.85] Details of the methods and assumptions associated with this modeling are available elsewhere.[86] These economic analyses are generalized and indicative of what might be achieved with the interventions considered. All cost estimates were converted to US$ (2001 exchange rates). While a societal perspective was adopted for each intervention, where appropriate the authors commented on cost-effectiveness from a government perspective. The time horizon for each intervention was one year. For comparability with other economic estimates, the estimates used discounted DALYs. Two preventive (pre-event) interventions were modeled for Europe and Central Asia, while an additional three were not (Table 2).

[****] This section draws heavily from the work of one of the authors (AA Hyder) with colleagues in the Disease Control Priorities Project. For more information see www.dcp2.org

Table 2: Cost-Effectiveness Estimates of Injury Interventions for Low- and Middle-Income Countries in Europe and Central Asia (2001 US$)

Intervention	Costs (1)	DALYs Averted (2)	Cost per DALY (3)
Improve and publicize traffic enforcement	195,971	1,433	137
Speed bumps for top 10% of most lethal junctions (3)	708	158	4.48
Bicycle helmet legislation and enforcement (4)	*265,000*	*2,478*	*107*
Motorcycle helmet legislation and enforcement (4)	*257,500*	*589*	*437*
Childproof paraffin containers (4)	16,000	263	61

(1) Cost to intervene in a population of 1 million for one year (not including costs offset by prevented medical care)

(2) Present value of annual DALYs averted discounted at 3 percent per annum

(3) Assuming city of 1 million people

(4) These estimates were not done for Central Asia or Eastern Europe and are presented for illustration only.

Source: Norton et al, 2006

Based on a model of the costs of media coverage and of better police enforcement, it was estimated that implementing an intervention in Europe and Central Asia to publicize and enforce traffic speed and other road safety regulations in a population of 1 million people might cost $196,000. This could result in US$137 for each DALY averted. Table 2 also presents the costs per DALY saved by building speed bumps at the top 10 percent of the most lethal junctions in a city of 1 million people.

Three additional pre-event interventions were modeled (Table 2using data from specific countries. Bicycle and motorcycle helmet legislation and enforcement were modeled using data from China, while childproof paraffin containers for poisoning prevention were

modeled using data from South Africa. The results identify the potential for such interventions to be cost- effective in the E&E region, but no regional data is available.

Post-event interventions for all forms of injury can be addressed with system improvements such as emergency medical systems (EMS). Figure 13 highlights the difference in case fatality from injuries (post-event, adjusted for severity) in three different countries at differing levels of economic development; the rates of death are highest where EMS is weakest. Such data reflect the potential for an EMS to address the growing burden of trauma and injuries (irrespective of cause) through improvements in both pre-hospital and facility-based care. It is important to recognize that any improvements in EMS will have positive externalities for any acute condition in the population (acute heart disease, reproductive conditions, or infections).

Figure 13: Impact of different Emergency Medical Systems on Case fatality rates for Injuries

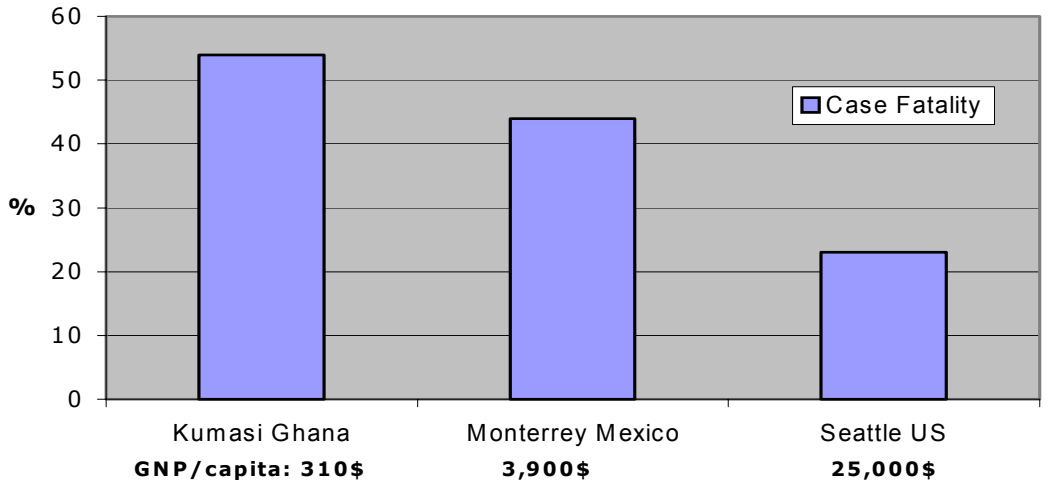


Table 3 shows estimates for economic analysis of some interventions for post-event care in the form of upgraded emergency medical systems (Table 3). Training of lay responders and paramedics as a unified intervention strategy and staffing community-based ambulances in both urban and rural areas were modeled using best available data. Estimates for low- and middle-income countries in Europe and Central Asia, as shown in

Table 3, indicate that both interventions are low-cost (for a population of 1 million people) and very cost-effective.

Table 3: Costs and Effectiveness of Interventions for Emergency Medical Care for Low- and Middle-Income Countries in Europe and Central Asia (2001 US$)

	Costs for a population of 1 million people	**Cost per death averted**	**Cost per life year gained**
Trained lay first responders and paramedics	52,339	141	5
Staffed community ambulance, urban	1,024,235	1,463	75
Staffed community ambulance, rural	3,083,637	4,405	227

Source: Kobusingye O, Hyder AA, Bishai D et al, 2006

Cost-effectiveness data in the field of *violence prevention* is even more limited.[87] Studies show, however, that the costs of implementing interventions are less than addressing the outcome of violence.[88] Estimates for cost-benefit ratios (CBR) have been shown in the United States for shelters for women victims of domestic violence with CBR of 18.4 to 6.8; and child abuse prevention programs with CBR of 1.86. Laws requiring registration of firearms and youth violence prevention programs have also very favorable demonstrated cost-effective estimates.[87]

The order of magnitude of the costs per DALY averted with these injury counter-measures (Tables 2 and 3) suggests that many injury interventions are highly cost-effective at less than $500 per DALY averted. [89]

Model NCD Programs

Based on the best evidence, and USAID's experiences in the region, we propose the following programs for consideration by the USAID missions and by the countries. The appropriateness of each program will depend on the specific country context. We have attempted to highlight the key elements of each program, which can then be adapted to the specific characteristics of each country's health system. In some cases, programs may be incorporated into larger ongoing initiatives. In other cases, the programs for which these interventions can be adapted may already exist. The models are general solutions that may be more effectively applied to a different disease of particular importance in the local environment. In most cases, these projects can be applied to various non-communicable diseases, given that all share characteristics such as requiring a combination of accurate diagnosis, management, patient education, and behavior change.

Cardiovascular Disease I (CVD)

Strengthened cardiovascular screening and control within a primary healthcare setting.

Evidence Base

Both the WHO report and the World Bank's "Disease Control and Prevention 2" report emphasize the use of aspirin together with beta blockers and selective use of diuretics as a proven cost-effective method to manage cardiovascular disease. While hypertension is an important risk factor for cardiovascular disease, retraining practitioners to manage therapy based on overall risk is a key element of a cost-effective cardiovascular disease prevention and control program.[90] This approach to managing cardiovascular disease is highlighted as one of the neglected low-cost interventions that provide substantial health benefits for the inputs required.[91] Evidence shows that through early detection, control, and other treatments, CVDs can be combated, ultimately averting premature death and disability. Detection and control methods have proved to be effective, simple, and inexpensive.

Model

To assess the level of the risk for CVD in a community and to screen for those at risk of developing CVD, blood pressure levels of as large a sample of the population as possible are obtained. This is often done through workplace-sponsored programs, at churches, for all patients visiting a healthcare facility, or as part of a health fair. Individuals with blood pressure levels above 140/90 mmHg are encouraged to enroll in the hypertension control program.

Once enrolled, all patients considered to be high risk are given thiazide diuretic treatment to start, and if the desired blood pressure level is not achieved, a beta blocker is added. These inexpensive drugs have been proved to be at least as effective for the control of arterial hypertension as the new classes of expensive antihypertensive drugs. Medications cost the program approximately US$7.50 per patient per year. The effectiveness of the intervention is observed though follow-up visits, which may be initially planned for every two weeks. Once the targeted blood pressure level is reached, follow-up visits can be conducted once a month and, later, once every two months. The healthcare provider keeps track of patient progress, and patients receive health promotion materials and education about issues related to controlling hypertension.

A train-the-trainers approach is an effective way to sustain this type of program. Training areas should include the accurate measurement of arterial blood pressure, contemporary hypertension treatment methods, and healthy lifestyles, as well as the ability to identify high-risk patients. As the program spreads, newly trained specialists will be able to provide training.

This process was employed by the Mtskheta-Mtianeti/Milwaukee primary healthcare partnership in Georgia to develop a community-based program designed to improve detection and control of high blood pressure. The program began in Dusheti, a rural area of the Mtskheta-Mtianeti region, and later spread to four other districts. A total of 562 patients were enrolled as of January 2001.

The partnership saw impressive results: 68 percent of enrolled patients in Dusheti achieved their desired blood pressure levels, as did 53 percent of patients overall in the five districts. Overall, systolic and diastolic pressure levels decreased 12 percent and 10 percent on average, respectively. Since 2001, deaths due to CVDs have decreased significantly in patients enrolled in the program. Of the total of 13 deaths among enrolled patients in 2001, nine were due to CVDs. The next year, none of the five recorded deaths among enrolled patients were due to CVDs. These initial findings suggested to evaluators that this program has contributed to a decreased CVD mortality rate among the targeted populations.

The Gori/Milwaukee PHC Partnership, building on the successes of the neighboring Mtskheta-Mtianeti program, was established in the Kareli district of the Shida Kartli region in October 2004. In September 2005, the program was extended to Gori, enrolling approximately 200 patients. This program also addresses the accurate measurement of blood pressure, effective treatment of hypertension, and increased awareness among patients with HBP of the need to manage their conditions. Training of Georgian physicians and nurses has been conducted locally by Georgian master trainers, who were prepared through the Mtskheta-Mtianeti/Milwaukee partnership. This practice has helped to keep training costs low. Initial indications are that patients enrolled in the program are controlling their blood pressure better and suffering less from CVD complications. The HBP treatment guideline was submitted to the Ministry of Labor, Health and Social Affairs in Georgia and is currently being considered for nationwide replication under the reformed PHC service delivery package.

The programs in Georgia have demonstrated that blood pressure control activities can be successful in this region of the world. Noticeable improvements in blood pressure control can be attained through a combination of healthcare worker training and inexpensive yet effective medications. Based on the experience in Mtskheta-Mtianeti, there are substantial gains to be realized in averting deaths due to CVDs.

Cardiovascular Disease II: Quality Improvement

Better management of arterial hypertension in a quality improvement program.

Evidence Base

Even the most cost-effective intervention, if poorly implemented, will fail to deliver benefits and result in wasted resources. The negative consequences of poor programs are magnified in settings where resources are scarce and only a fraction of beneficial services can be provided. Although perhaps the most difficult to quantify and link to outcomes, quality improvement (QI) is critical in order to get the most benefit out of any intervention. The development of evidence-based clinical practice guidelines and processes that encourage improvements based on program experience are the key elements of successful quality improvement. The hypertension program in Tula, Russia, which is the basis of our recommended intervention, was cited as a model quality improvement program by the DCP2.[92]

Model

Quality improvement is a systematic process of addressing the gaps between current practices and desired standards. The quality assurance approach integrates improvements in delivery of health services with the development of evidence-based medicine guidelines. Effective approaches to quality improvement include individual problem solving, rapid team problem solving, systematic team problem solving, and process improvement. Indicators of quality are defined and measured before, during, and after the introduction of changes. USAID has funded several quality improvement projects in the E&E region, mostly to improve arterial hypertension.

The process starts with experts' analysis of the healthcare systems to identify "all unclear steps and variations in practice" and develop indicators that, along with baseline data, would allow for comparisons before and after the system was altered. The clinical team goes through the process of healthcare delivery and, at each step, makes explicit what clinical content is relevant. The clinical content can be in many forms: clinical definitions,

criteria for diagnoses, criteria for referral, and others. Experts and leaders use evidence-based medicine to reorganize the delivery of health care in selected problem areas and publish guidelines based on this approach. At the final stage of the implementation, the guidelines are tested in practice and those with good results are disseminated to other healthcare facilities. Most quality improvement projects funded by the USAID have had the following components:

- A screening program
- New clinical guidelines at the primary care level
- Revised policy on referral and interface between the primary care and the hospital care including referral criteria and new patient charts
- A health promotion program, which includes education, as well as patient support activities
- Revision of existing "directives" and "methodological recommendations" to facilitate the implementation of the new system

The guidelines are developed as an integral part of the quality improvement projects. The following description applies the quality improvement approach to hypertension, a model with proven success in the E&E region. However, the process can be applied to other diseases.

Patients with elevated blood pressure are detected by means of screening, which is the first stage in diagnosing arterial hypertension. Screening involves measuring blood pressure of each patient, irrespective of the reasons for the visit to the general practice. Proactive monitoring of patient visits ensures that those patients who will benefit most are not lost to follow-up.

In addition to screening, a public awareness campaign informs the public about the program. An effective public awareness program funded by the USAID set up a hotline service providing residents with consultations from medical professionals on arterial hypertension and relevant diseases and broadcast a public service announcement about hypertension in Ust-Kamenogorsk, Eastern Kazakhstan.

Patients who are classified as hypertensive are considered for the next stage of the diagnosis to assess the damage to target organs and treatment. Special control charts are created in order to register and observe individuals with arterial hypertension on an outpatient basis. Treatment strategy of a patient with arterial hypertension is based on placing the patient in an appropriate risk group for this condition. An individual treatment plan, including necessary medications, is chosen in accordance with established clinical practice guidelines. Often, the first-choice medications are diuretics and beta blockers. Upon detection of hypertension, patients are also registered for a mandatory Health Promotion Program, which will provide him/her with knowledge on lifestyle change and non-medicinal methods of treatment of arterial hypertension, generally in a group education environment.

The Quality Assurance Project in Tula, Russia, is one of the successful examples of this process. The program was initiated in six healthcare facilities, working on the different components of the project. A steering committee, consisting of Oblast senior physicians, and health leaders from Tula Oblast, was set up to oversee the project. Technical assistance was provided by the CHS-QAP, the American College of Physicians, the Agency for Health Care Policy Research, MedSocEconInform, and the Moscow Medical Academy. The initiation, research, and development of the practice guidelines, along with the implementation of a six-month pilot in six general practitioner offices (approximately 15,000 adults), cost $300,000 in Russia; scaling up this pilot to the Oblast level required $400,000 more for two years of implementation. The cost-evaluation study indicated that

- Hospital hypertension treatment costs have decreased 41 percent.
- Primary care hypertension management costs have decreased 39 percent.
- The overall cost of care for patients with hypertension has decreased 23 percent.

Diabetes

A team approach to educate patients in the self-management of diabetes.

Evidence Base

Glycemic control in patients with diabetes, through both insulin and lifestyle changes, is one of the most cost-effective interventions available for managing diabetes. Naturally, the cost-effectiveness ratio is greatest for populations with poor baseline control, defined in the DCP2 as HbA1c greater than 9 percent.[93]

Model

Diabetes Education Centers modeled on the USAID-funded project in Dubna, Russia, are good examples of diabetes education, awareness, and motivation for self-care programs that improve quality of care, reduces complications, and may reduce overall economic costs of diabetes.[94]

Diabetes schools provide an integrated package of clinical services that could be integrated into a primary care delivery system. Although the schools emphasize patient self-management, they also strengthen outpatient care for polyclinics and hospitals in their city or region, as sites for referrals and services that are closer to people's homes. Health professionals also receive training on evidence-based practices and quality improvement at the centers. The healthcare team at the center consists of health professionals with backgrounds in endocrinology, ophthalmology, psychology, podiatry, internal medicine, and physical therapy. In addition, diabetes education centers employ district nurses who are trained to conduct communitywide screening activities, identify diabetics, and refer them for appropriate treatment, education, and follow-up. Over time, these same centers can expand to provide disease management for a host of non-communicable illnesses as well as infectious diseases.

The school offers six three-hour sessions for patients and their families on diet, accurate use of glucometers, physical exercise, treatment with insulin, hypoglycemia and

hyperglycemia, and podiatric and ophthalmologic problems of diabetes. Patient education modules include color lesson-by-lesson cards for children and adults, color posters, and patient diaries. As patients learn to take more responsibility for managing their care, they keep track of their own progress and implement necessary changes in their diet, physical exercise, and lifestyle. Group-based training for self-management strategies has been shown to be effective in reducing blood glucose levels, systolic blood pressure levels, body weight, and diabetes medication use. A recent Cochrane review based on studies in the USA and Europe suggests that for every five patients attending a group-based education program, one patient would be expected to reduce diabetes medication.[95]

The model implemented in Dubna, Russia, also produced very encouraging results. In three years, the program reduced the average length of stay for patients hospitalized with diabetes-related conditions from 33 days to 20 days and resulted in a fivefold drop in hospital admissions of patients in diabetic comas. In addition, average levels of insulin use among patients enrolled in the program dropped about 30 percent for insulin-dependent and 24 percent for non-insulin-dependent patients. Dubna City Health Administration reported a healthcare savings of about 188 million rubles as a result of the program in 1996.[96]

The sustainability of the diabetes schools depends on the extent to which they are incorporated into the existing healthcare system and the commitment from government officials. Establishment of the first school, which would also serve as an education center for other schools and prepare education materials, cost approximately $350,000 for a three-year period. The school provided services to 600 patients and 300 family members annually and trained 120 medical professionals. Additional schools will require an average investment of about $13per patient for patient education, which will produce an average savings/cost ratio of is 3:1.

Asthma

Education and self-management for patients to recognize and prevent asthma symptoms.

Evidence Base

As discussed previously, although the rates of asthma in the E&E region are comparable to those in the rest of Europe, reducing the mortality from this condition is an important objective. Patient self-management and, especially, education on appropriate medication use are sound cost-effective interventions according to the DCP2.[97] Furthermore, as with any disease, improving diagnosis and appropriate management on the part of providers is central to ensuring the effectiveness of any intervention.[98]

Model

USAID funded several projects to improve asthma care and prevention in the E&E region.[99] Success stories involve development of asthma treatment and diagnosis guidelines along with patient education programs. Education and self-management programs for families directed at reducing childhood asthma morbidity and improving quality of life have proved effective in many countries. Programs typically include adapting clinical practice guidelines to locally available and affordable resources, designing a small pilot project with clearly defined process and outcomes measures, developing a patient education curriculum that includes knowledge and skills testing, and modifying the program on the basis of lessons learned in the pilot project. The goals of patient education support the concept of patient self-care and include teaching the patients to recognize signs and symptoms of their condition and prevent emergencies; monitor disease status with peak flow metering; take medicines properly; know the difference between medications for acute and chronic care; and avoid asthma-triggers.

In many countries patients with NCDs are required to visit a physician at monthly intervals in order to receive medication for the following month. As a part of asthma control program, each patient maintains a standard diary for recording daily peak flow meter readings and reporting medication use, number of days and nights with asthma symptoms, emergency department visits, hospitalizations, days of missed school or work,

satisfaction with asthma control, use of spacers, and use of cigarettes. These diaries are reviewed in monthly visits and individually based modifications are assessed by a nurse or a physician.

One of the successful projects in asthma was implemented in Sarov, Russia, under the partnership with Los Alamos, New Mexico. After completing a six-month asthma pilot program in 2001 that initially involved 115 patients both adults and children, the city health department adapted guidelines based on the results of the study. All patients attended an asthma school and demonstrated knowledge of their illness and skill in self-care techniques. Results showed that these patients had fewer symptoms, emergency visits, hospitalizations, and lost school- and workdays, as well as increased patient satisfaction. Overall, the percentage of patients that reported daytime symptoms and nighttime symptoms decreased by 18.8 percent and 23.5 percent after six months, respectively.[100]

Tobacco Control

Incremental price increases to discourage usage of tobacco products.

Evidence Base

Of all the interventions available, policy interventions to reduce smoking are among the most cost-effective. Smoking adversely affects nearly every organ system in the human body.[101] Among the policy interventions that have demonstrated efficacy--restrictions on advertising, warning labels, bans on smoking in public places, taxation of tobacco products--taxation is by far the most cost-effective. Raising the price of tobacco products by 33 percent has a cost-effectiveness ratio in developing countries of between US$3-42 per DALY averted.[102] Although we were unable to find an example of an existing program in the E&E region that met all our selection criteria, several countries in the region have engaged in various efforts to reduce tobacco consumption.

Model

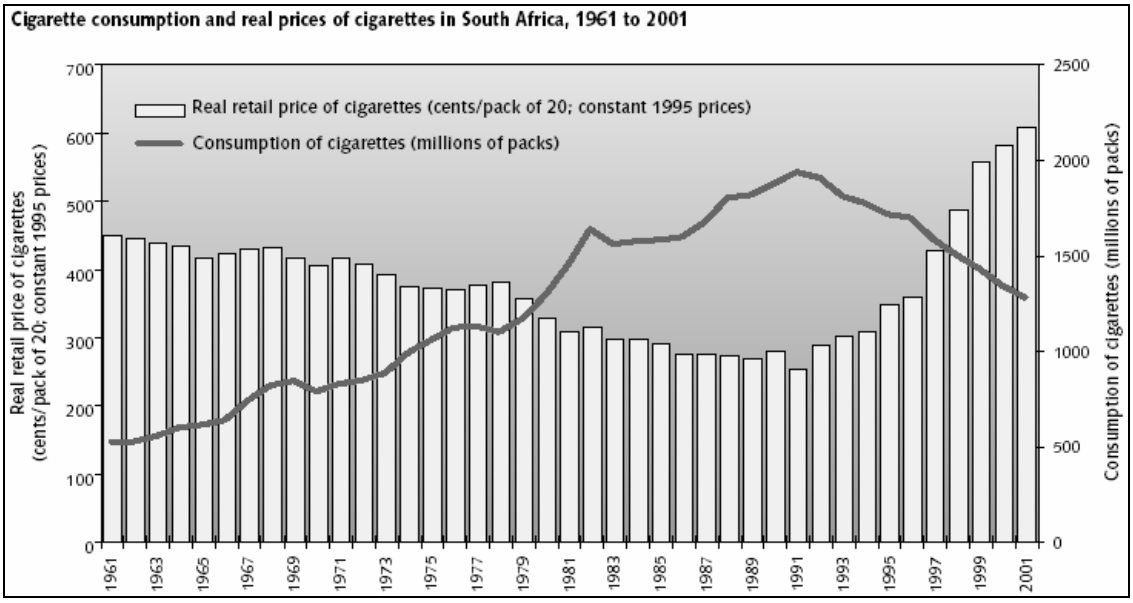
The successful implementation of price increases for tobacco products requires a gradual and comprehensive approach. Promoting tobacco tax increases to local governments through the creation of lobbying groups has proven to be a successful intervention. An excise tax on tobacco products implemented as a specific tax ; one that is based on quantity, will be a more effective deterrent to smoking than other types of taxes. Effective programs tax all types of tobacco in order to prevent consumers from substituting goods. Excise taxes should be introduced gradually to prevent a backlash.

One example of a successful tobacco taxation program occurred in South Africa. In 1994, the Minister of Finance began increasing the tax on tobacco products, ultimately to 50 percent of the retail price. This increase was phased in over three years by incrementally increasing the excise tax. Tax increases were also imposed on other tobacco products besides cigarettes to prevent people from substituting other forms of tobacco.

This intervention was encouraged through a very vocal tobacco control lobby which focused on (1) an advertising ban, (2) restrictions on smoking in public places, and (3) increasing tobacco taxes. The tobacco control lobby used locally generated research to convince policymakers. The need for local research was an essential component to their argument because policymakers were not initially convinced by research performed in different countries, under potentially different circumstances.

Figure 14 llustrates the decrease in tobacco consumption as the real retail price of cigarettes has increased.[103] In South Africa, the consumption of cigarettes decreased by 5 percent to 7 percent for every 10 percent increase in the real price of cigarettes.[104] Though demand elasticity is different for every country, these results suggest there will be a response to a tobacco tax in the E&E region.

Figure 14



Interventions to combat tobacco use have been implemented in the E&E region as well. Poland has a very strict tobacco control policy which prohibits tobacco advertisements on television, radio, and various other mediums. In addition, Poland has introduced a value added tax (VAT) of 22 percent for tobacco products.[105] Hungary's entry into the European Union has meant compliance with EU regulations concerning tobacco advertising, and thus an eventual ban on tobacco ads, though they have made exceptions for Hungarian Formula 1 Racing advertisements. [106] In Macedonia, a law banning smoking in public places and cigarette advertising was implemented January 2006. Kazakhstan has aired numerous anti-smoking videos in its efforts to reduce smoking rates.[107]

Model Injury Programs

Based on the criteria in Haddon's matrix and potential intervention effectiveness and cost-effectiveness, some existing programs in Eastern Europe look promising and can be recommended for expansion both nationally and in other countries. The following programs appear to be promising examples of what is possible in the region (see Annex 3 for details).

Model Programs in the Region

Emergency Medical Services in Uzbekistan[73]

The program was aimed at improving the emergency first response system by promoting donation of modern ambulances and their effective dispatch and use; ensuring full operation of the Poison Control Center in Tashkent; initiating a Poison Control Center in Ferghana; and addressing sustainability of these centers. After the new emergency medical services unit was established, the percentage of effectively treated cases of acute myocardial infarction increased from 75 percent in 2000 to 90 percent in 2002. The Ferghana center also reported a significant drop in pre-hospital mortality. As a result of the program, the Ferghana center established a monitoring and analysis mechanism for trauma cases, and initiated work with local and national governmental agencies to identify ways to reduce trauma from injuries occurring on the road or at home, as well as those related to substance abuse.

Black Spot Treatment in Poland[59]

The term "black spot" describes an extremely dangerous spot or section of the road. Unfortunately, a large number of tragic road crashes take place regularly in Poland at these spots, and some 1,100 black spots have been recognized on Polish roads by the General Directorate of Public Roads. Around 100 of these spots were selected for special signage and highly conspicuous traffic signs were created in order to direct the attention of drivers to the particular danger they were approaching. Evaluation results indicated that the number of crashes at these spots decreased by 35 percent, which was accompanied by a 23 percent reduction in the number killed and by 28 percent fewer injuries. Looking at these results, the World Bank's Global Road Safety Partnership in turn selected 10 particularly dangerous spots in collaboration with the General Directorate of Public Roads, where night visibility was the primary problem. These have been marked with highly conspicuous traffic signs using Diamond Grade reflective material by project partner 3M® to draw drivers' attention to the potential danger. This program has been implemented nationwide.

Dubna Alcohol Program (Russia)[75]:

This program was initiated in 1992 with the aim to develop a comprehensive multidisciplinary program including prevention, intervention, treatment, and aftercare to deal with problems of alcohol and substance abuse; to assist in developing the necessary model community resources to implement an effective comprehensive alcohol and substance abuse treatment program in Dubna area; and to expand the comprehensive multidisciplinary program approach to four other cities in Russia. Alcoholics Anonymous groups were organized and are now regularly held in Dubna to meet the needs of teens affected by alcoholism, either personally or with their families. Perhaps the greatest accomplishment of the alcoholism treatment work through the program is the changing community attitude about treating alcoholism as a disease that affects not only the alcoholic, but also his/her family. This stride has allowed for more services for the alcoholic and a medical environment for safe treatment and follow-up for the disease. As a result of the program, alcohol sales in Dubna liquor stores were restricted after 9p.mThis program was found to be effective and has been expanded into other cities of Russia.

'Nadja' Care Center: Violence Against Women - Prevention & Care in Bulgaria[79]

The Nadja Center was initiated by the Bulgarian Women's Union in March 1995 to respond to the increasing violence against women and the lack of proper care for victims of violence. The prevention and care programs are implemented by the "Nadja De" Foundation in its capacity of an independent nonprofit organization officially registered in Bulgaria. It provides a variety of services including telephone help-line, counseling (psychological, legal, social), psychotherapy, and referral services. The main goals include enhancing the awareness of society, institutions, and professionals of the problem of violence and the gender issues; helping the healing and recovery processes after traumatic events with a view to improving the mental health of the general public; contributing to setting up psychosocial centers in the country for women-victims of violence and establishing contacts with the relevant and analogous organizations in the country and abroad. The Nadja Center receives understanding, encouragement and effective support from both state institutions and NGOs in carrying out its pioneering work in this field. According to the center's own statistics, there is a manifold increase of the

number of women who used its programs for the 1997 year compared with the year 1996 (e.g., there were 960 help-line consultations in 1997 compared to 26 in 1996). The center has succeeded in creating its own identity and in establishing a vision of the way it could effectively provide help to women and could bring about change in social attitudes, policies, and practices with respect to the issues of violence against women.

Recommendations for Injury Programs

Using the four examples discussed in the earlier section, Table 5 consolidates some of the information presented to demonstrate the potential for implementation of such interventions. These interventions cover both the pre-event (primary prevention) and post-event (secondary prevention) phases of injury, are able to impact on death and disability, and are estimated to be low- cost and cost-effective in view of available information.

Table 5. Recommendations for Injury Interventions

	Exemplary Injury Programs			
Program	**Alcohol and substance abuse**	**Road traffic injury prevention (black spot treatment and speed control)**	**Emergency medical services**	**Violence prevention**
Example	Russia	Poland, Global	Uzbekistan	Bulgaria
Intervention type	Risk factor control	Visibility enhancement, risk factor control	Enhanced responsiveness	Facility- based management
Injury type/s affected	Road traffic, violence of all types	Road traffic	Acute injuries and trauma (acute events)	Domestic violence
Haddon matrix	Pre event and personal	Pre-event and equipment	Post-event and environment	Post-event
Cost-effectiveness	Expected high	High (same as speed bump)	High per life saved	Potentially moderate to high

Economic analysis of injury interventions is clear on the implications – these interventions are both low cost at a population level, and cost-effective in terms of their impact on mortality reduction and life years saved. Best estimates done recently have demonstrated that interventions like speed bumps for road traffic injury prevention compete as one of the most cost-effective interventions available in the health sector for reducing the burden of death and disability in low- and middle-income countries. More importantly, interventions are needed both for primary prevention of injuries and, once they occur, for treatment in terms of healthcare delivery and emergency services. The countries of the E&E region are similar to other low- and middle-income countries in this respect – the need is great but the response has not been optimal in terms of program investments for injury and violence prevention.

IV. Conclusion

We have attempted in this report to present a clear picture of the substantial impact of non-communicable diseases and injuries (NCDI) in the Europe and Eurasia (E&E) region. We have also tried to provide an overview of inexpensive, cost-effective programs for the prevention and/or management of NCDIs, which have been successfully implemented and sustained in the E&E region and which could be replicated on a broader scale. Death and disability due to NCDIs in the countries of the E&E region far exceed death and disability from all other causes. No intervention aimed at other causes of mortality and morbidity has the potential to have as much of an impact as working to prevent and manage NCDIs. Death and disability from non-communicable disease and injury affect people at every age, equally both genders, and all countries of the region. We also provide evidence that the cost of not preventing and not effectively handling non-communicable disease and injury is high, not only in terms of individual lives lost or wasted, but also in terms of resources misused and GDP spent or forfeited.

Numerous studies and successful programs have shown that both non-communicable disease and injury can be prevented or managed, enabling those afflicted to continue to live productive healthy lives. Yet although there is a growing awareness of the problem of

NCDIs in the E&E region, the resources allocated to programs focused on controlling NCDIs either through prevention or management have been limited. The prevention and management of NCDIs has the potential for a much greater impact on mortality and morbidity in the E&E region, and could be addressed in conjunction with other ongoing programs.

This report has demonstrated that in spite of the limited funding, inexpensive, cost-effective, and highly effective programs to prevent and manage NCDIs have been implemented in the E&E region by USAID. Programs for diabetes, asthma, tobacco control, and cardiovascular disease are described in this study as examples of highly successful NCD programs that could be easily and inexpensively replicated and integrated into existing healthcare systems. Programs for alcohol and substance abuse prevention, road traffic injuries, emergency medical systems and domestic violence management have been implemented successfully with great potential for going to scale while retaining their cost-effectiveness. Any one of these programs would provide measurable progress toward reducing mortality and morbidity from NCDIs in the E&E region.

Results from selected NCD and injury prevention programs, if effectively expanded in the E&E region, will make a significant difference in reducing the heavy toll of diseases and injuries on lives of people. We recommend that USAID and other international donors give consideration to interventions that will prevent or manage NCDIs and thereby increase the healthy productive years and decrease the economic and social costs of NCDIs for the people of the E&E region.

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Country	Program Name	NCD Addressed	Program Location /Dates	Short Description of the Program	Clinical Outcomes	Cost Outcomes	Policy Outcomes/Sustainability
1. Albania	Tirana, Albania/ Providence, Rhode Island Partnership- Women's Wellness Center Partnership	Cervical Cancer	Tirana 1999-2004	Increased cervical cancer screening			
2. Albania	PHRplus	Various- Refocus from curative to preventative care	At least since 2001- Current	Helped provide health information to patients and doctors.			
3. Armenia	Armenian American Wellness Center	Cancer	Yerevan 2000-present	to reduce breast and cervical cancer morbidity through improved clinical, diagnostic, preventative and community services. Clinical center opened and public information system initiated.	1800 cases of breast and cervical cancer detected between 2002 and 2002. Increased awareness among population.		
4. Armenia	Health Partnerships (unsure of program name)	Preventive medicine and awareness of healthy lifestyles	Districts: Margahovit, Gugark, Shirakamut, Vahagni, and other remote villages of Armenia Sept. 29, 2003- October 28, 2004	Five partnerships. Screened for hypertension, vision, glucose, cholesterol levels, breast and cervical cancer. Healthy lifestyle and substance abuse education. Educated health professionals on diabetes, asthma, hypertension.	Surveys suggested significant increase in health knowledge, perceived health status. Utilization of preventive screening services increased. Domestic Violence, chronic pain, and smoking decreased.		Greater accessibility of health services. Increasingly more physicians and nurses trained to deal with AH. Physicians monitor data from polyclinics and continually make recommended changes to specific clinics
5. Armenia		Various	12 villages Sept. 25, 2002- Dec. 24, 2004	Community health education workshops for more than 600 people. Education of health professionals on how to deal with chronic conditions.			This program is expected to, or has already been incorporated into an existing SAE program.
6. Armenia	Armavir, Armenia/ Galveston, Texas Partnership	Cancer, Diabetes, Asthma, Cardiovascular Disease	Armavir 1999-2004	Improve record keeping and hold physician training sessions.	Steady increases in rate of breast cancer detection.		
7. Armenia	Gegarkunik, Armenia/ Providence, RI Partnership	Substance Abuse, Hypertension, Cancer, Diabetes, other	Gegarkunik 1999-2004	Expand education and disease prevention/detection services. Survey population health and upgrade facilities to meet local needs.	20% decrease in patients with uncontrolled high blood pressure.	New cost accounting system will improve Sevan polyclinic finances.	93% patient satisfaction at Sevan
8. Armenia	Lori/Los Angeles Partnership	Hypertension	Lori 2000-present	Training patients in health lifestyles and dissemination of education materials. If necessary patients given anti-hypertensive drugs	Almost 200 nurses and 50 physicians trained. 107 patients improved, 37 patients worsened, 398 stable and 236 no change in blood pressure. Mortality from CVD decreased from 20 to 15%		Initial program in one poly clinic expanded to four other poly clinics
9. Azerbaijan	Program for Family Planning and Reproductive Health Initiatives	Reproductive Health		Make improvements in the reproductive health status of married women and men and adolescents, largely through the mobilization, training and monitoring of peer educators and through the establishment of the "Bridge to Reproductive Health" network.			Trained over 200 peer educators, who have conducted health training in 25 communities for over 26,000 participants.
10. Azerbaijan	Child Survival Program	Breast feeding	Isolated villages in southern Azerbaijan 2001-Present	Volunteers educate women about breast feeding			
11. Belarus		Drug and Alcohol Rehabilitation		Briefly mentioned in an article, no other info available.			

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12. Belarus	Cardiovascular Wellness Center-Minsk/New Brunswick Partnership	Hypertension	Minsk 2000-?	Assess hypertension prevalence screenings, referral protocols developed computerized data collection. Conduct patient education and monitor risk factors.	54% (2003) of people from Zadovskoj Rayon of Minsk identified with hypertension. 11.5% assigned to risk group. Identified prevalence of CVD risk factors in population. After one year, declines in smoking, cholesterol, hypertension and obesity		Cardiovascular Wellness Center offered 5,350 individual consultations on CVD prevention and maintained six active CVD patient groups. In addition, partners underwent various outreach and educational activities
13. Bosnia and Herzegovina	Tuzla, Bosnia and Herzegovina / Buffalo, New York	Cancer	Tuzla 1996-1998	The University Clinical Center collaborated with the Tuzla business community to establish a health outreach program which provides ambulatory screening services to employees. The program, paid for by employers, includes breast examination, colonoscopy, pap smears and ovarian cancer screening through ultrasonography			
14. Croatia	Zagreb, Croatia/ Lebanon, New Hampshire Partnership	Asthma	Zagreb 1994-1998	Implement a comprehensive asthma program (CAP) at Srebrnjak Hospital by assessing clinical capabilities, understanding US outpatient management of asthma, developing clinical skills and patient/family education activities; establish programs for diagnosis, treatment, and prevention of asthma			
15. Croatia	Zadar, Croatia/Franciscan, New York Partnership	Hypertension, Cancer, Post-traumatic stress disorder	Zadar 1995-1998	Improve knowledge and skills related to prevention and detection of hypertension and cancer; increase recognition of PTSD and improve diagnosis and treatment; Hold study exchanges and workshops			
16. Croatia	Split Healthy City, specifically Project Northland	Alcohol Abuse	Split Completed 2004	Briefly mentioned in an article, no other info available. Community based alcohol prevention program designed for school children between the ages of 10 and 14 that strived to delay the age at which young people begin drinking, to reduce alcohol abuse among those who already tried drinking, and to limit alcohol related problems. Project Northland also strived to change how parents communicate with their children, how peers influence each other, and how communities respond to adolescent alcohol use.			Over 1,300 sixth graders participated to address alcohol abuse in youth. Implemented by 13 schools
17. Georgia	The Mtskheta-Mtianeti Regional Health Administration	Various, but specifically Cardiovascular Disease	Mtskheta-Mtianeti Region 1999-2004	Various preventive care programs including high blood-pressure control, nutrition program, dental interventions. Developed a community-based program aimed at increasing detection and control of high blood pressure.	Over 470 hypertensive patients have benefited from the program, and 53% are able to control their condition with lifestyle changes and available medications. Since the beginning of the program, steady decrease in deaths from hypertension, and the rate of hospitalization and complications have been lowered. Overall average decrease of 12 percent and 10 percent respectively in the systolic and diastolic pressures levels compared to baselines. Decline in mortality due to CVDs	$7.50 per patient enrolled in study. Low-cost, and uses a train-the-trainers approach.	Program expanded to 5 districts, initially from Dusheti.
18. Kazakhstan	Arterial Hypertension Clinical Practice Guidelines trainings	Hypertension	Karaganda, Semipalatanisk 2005	Provided clinical, continious quality improvement (CQI) and AH school training on working with the guidelines to doctors from primary and secondary health care facilities and ambulance attendants. Cost sharing with Kazakhstan Association of Family Physicians (KAFP)	Reduction in admission rates and the number of emergency calls to hospitals regarding hypertension. Improve doctors and patient adherence to the impleneted AH CPG	Shifting costs and resources to more cost effective primary care	Results of AH CPGs implementation in pilot sites will serve as a background for Karaganda Oblast health Department for future startegy development is that area.
19. Kazakhstan	Arterial Hypertension Awareness Campaign	Hypertension	Ust-Kamenogorsk 2004	21 training workshops on the methods of prevention and treatment of hypertension attended by 460 participants including both medical workers and AH patients. As part of its public awareness campaign, they set up a hotline service, providing residents with consultations from medical professionals. In addition, a public service announcement was created on How to Measure Arterial Pressure broadcasted in local stations.	The number of urgent calls to ambulances from the community patients with cardiovascular diseases had fallen by 30%, and hypertension related hospitalizations have decreased by approximately 85% and hypertensive crises decreased by approximately 60%.	The number of sick-leave days AH patients took dropped by 25%.	The School of AH Patients continues its work despite grant close-out, training 20 new AH patients and extending its services to residents in other city districts.
20. Kazakhstan	Hypertension Information Dissemination Campaign	Hypertension	Zhezkazgan and Satpaev 2004	The major purpose of the campaign was to provide basic information to the population, particularly high risk groups (middle age people), about arterial hypertension, the importance of controlling one's own blood pressure, the ways to measure blood pressure, the role of healthy food and lifestyles in controlling blood pressure, etc.	Improved quality of care	Shifting costs and resources to more cost effective primary care	

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Country	Program Name	NCD Addressed	Program Location /Dates	Short Description of the Program	Clinical Outcomes	Cost Outcomes	Policy Outcomes/Sustainability
21. Kazakhstan	The Conference on "The role of evidence based information (EBM) in prevention of arterial hypertension"	Hypertension	Almaty 2004	National Conference introducing new Arterial Hypertension Guidelines for outpatient treatment, implemented under the National Institute of Cardiology	Improved quality of care	Shifting costs and resources to more cost effective primary care	The new arterial hypertension clinical practice guideline (CPG) for PHC level was approved by Ministry of Health and Cardiology and Intewrnal Diseases Research Institute. Policy dialog on AH CPG dissemination and implementation in the country has started
22. Kazakhstan	Clinical Practice Guidelines	Hypertension	Karaganha Oblast 2001	Provided training on working with the guidelines to doctors from primary and secondary health care facilities and ambulance attendants	A decrease in admission rates and the number of emergency calls to hospitals regarding hypertension	Shifting costs and resources to more cost effective primary care	The new AH CPGs are now accepted practice in Karaganda and Zhezkazgan. They have gained the support of the Karaganda Oblast Health Department which has helped the CPGs for Arterial Hypertension to gain the approval of the Ministry of Health.
23. Kazakhstan	Family Medicine Training	Internal Diseases, Pulmonary Diseases, Cardiovascular Diseases, Coronary Heart Diseases, Joint Diseases and Connective Tissue Diseases, Gastrointestinal Diseases, Renal Diseases, Endocrinological Diseases, Blood Diseases	Almaty and other cities of Kazakhstan (Zhezkazgan, Satpaev, Taldykorgan, Karaganda, etc 1996-to present	Clinical training provided for family physicians, pediatricians and internist, as part of CME. Title of the courses are "Family Medicine" - duration is 8-weeks, "Internal Medicine electives" - duration is 5-weeks, "Clinical ECG and cardiology" - duration is 2 weeks, "Arterial Hypertension" 3 days module training. Collectively these courses cover the NCDs already mentioned. ZdravPlus provided technical support for the courses which were delivered by KAFP trainers/PGI faculty.	Improved quality of care through teaching EBM approaches in diagnosing, treatment and management of non-communicable diseases	Expected decreases hospitalizations	Institutionalization of Family Medicine Training for doctors CME
24. Kazakhstan	Almaty, Kazakhstan/ Tucson, Arizona	Cancer	Almaty 1993-1999	Opening of the Women Wellness Center, implementation of breast self-examination program.			
25. Kazakhstan	Astana, Kazakhstan / Pittsburgh, Pennsylvania	Hypertension, diabetes, alcoholism, mental health, drug-addiction	Astana 1999-2004	A large multi-disciplinary Community Advisory Board (CAB) was established, and it actively supports the Family Medicine Center 's (FMC) preventive programs for high-risk groups. The Board identified the following risk groups in the catchment area for targeted interventions: orphans, low-income families, tuberculosis patients, alcoholics, drug addicts, diabetics, and mental health patients. Activities have included distribution of a newsletter on family medicine for parents and children, education of adolescents related to sexual and reproductive health as well as alcoholism prevention, meetings with senior citizens, creation of a group to promote breastfeeding, and seminars for women on gender issues (such as domestic violence and protection of women's rights)	A decrease in admission rates and the number of emergency calls to hospitals regarding hypertension; ability of people to manage their own health condition; decrease in a number of drug-addicts among youth;		At the Family Medicine Center "Demeu" patient clubs are established including a Cardiology Club whose members were trained in self-help and mutual assistance in dealing with high blood pressure. Ministry of Health, City Health Administration actively supported this program; currently it is replicated in 4 additional cities in Kazakhstan. Patient clubs, including for elderly people with hypertension and cardiology diseases, for disabled children, for drug-addicts were established in replication sites. First joint MOU signed by Ministry of Health and Ministry of Labor and Social Welfare to confirm linkages of health care and social services.
26. Kazakhstan	Semipalatinsk, Kazakhstan / Houston, Texas	Cancer	Semipalatanisk 1995-2000	Develop cancer screening and prevention programs, cancer registries at selected sites.	Created a tumor registry and cancer screening program that evaluates the long-term effects of nuclear tests radiation exposure on population of Semipalatinsk region.		Two protocols were developed for Children's Acute Lymphoblastic Leukemia (ALL) treatment. Cancer registries are established. Skin cancer, prostate, and thyroid screening forms are translated and distributed. Parents education program is established.
27. Kazakhstan	Healthy Communities Grant Program/Counterpart International	Hypertension, anemia, diabetes, iodine deficiency disorder (IDD)	Almaty, Semey, Ust-Kamenogorsk, Pavlodar 2002-2005	To provide assistance to local NGOs, community-based organizations (CBOs) and community groups in developing their skills and capacities to proactively engage communities in identifying and implementing local health initiatives.	Patients can manage their own health condition, control high blood pressure, take needed medicines correctly; people understand that healthy nutrition can prevent many diseases, including hypertension, diabetes, and anemia.		

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28. Kosovo	Gjilan/Hanover Partnership	Cardiovascular diseases Hypertension	Gjilan 2002	The goal is to improve the quality of family medicine practice for the Gjilan Main Family Medicine Center (MFMC) by instituting continuous improvement systems, implementing clinical practice guidelines, improving team communication, and establishing community-based programs.	October 1, 2002 - December 31, 2003; 39,318 patients scanned. As of March 2004, the center identified 185 hypertensive patients. Based on an initial assessment, their mean BP readings decreased after receiving treatment; however, it is too early for the project to recognize any significant changes or trends in patients' health. 95% of staff trained in hypertension screening.		
29. Kyrgyzstan	Family Medicine Training of Trainers and Retraining of Family Medicine Physicians	Internal Diseases, Pulmonary Diseases, Cardiovascular Diseases, Coronary Heart Diseases, Joint Diseases and Connective Tissue Diseases, Gastrointestinal Diseases, Renal Diseases, Endocrinological Diseases, Blood Diseases, Skin Diseases, Psychiatry, Diseases in Children	All Oblasts TOT: 1997-2004 FM Retraining: 1998-2005	The Family Medicine Training of Trainers Program produced 63 Kyrgyz Family Medicine doctor trainers and 64 nurse trainers who went on to provide retraining for nearly all of Kyrgyzstan's roughly 3,000 family physicians, and 85% of its 4,500 nurses. The trainings covered 37 different clinically relevant topics, including mentioned NCDs, and emphasized a more holistic approach for trainees who, under the Soviet System, had either been trained in adult or pediatric medicine or both. This TOT and re-training were implemented by ZdravPlus partners the Scientific Technology and Language Institute as a part of an overall effort on the part of the Kyrgyzstan Government to reform and update their Health Care System.	Improved Quality of Care provided to the population. Improved continuity of care, improved use of CPGs; decrease in percentage of prescriptions given	In conjunction with broader reforms in the overall Kyrgyzstan Health Care System the re-training has contributed to lower rates of hospital, hosptial admissions, and unnecessary medications, resulting in overall cost reductions to the health care system.	Institutionalization of Family Medicine Training and further government and MOH commitment to continuing medical education programs for physicians in addition to a post-graduate residency program in family medicine and steps taken towards reforming medical education.
30. Kyrgyzstan	Healthy Schools Curriculum	Addictive Behaviors	All Oblasts 2002	41 pilot schools to incorporated the healthy lifestyle curriculum at a pace of two grade levels per year and trained 168 participants in the total of 6 sessions.	Improved skills on healthy lifestyles and reduction of addictive behaviors in youth and young adults	Expected decreases hospitalizations and treatment costs	Program approved by the Academic Council of Kyrgyz Education Academy
31. Kyrgyzstan	Healthy Schools Curriculum	Addictive Behaviors	Bishkek 2002-2005	Developed module courses on Healthy lifestyles Addictive Behaviors, Physical Activity for the students from first to eighth grades	NA	Shifting costs and resources to more cost effective primary care	Improved quality of care
32. Kyrgyzstan	Healthy Schools Curriculum	Addictive Behaviors	Bishkek 2005	Developed and published methodical manual for teachers on culture of health (healthy lifestyles)	NA	Shifting costs and resources to more cost effective primary care	Improved quality of care
33. Kyrgyzstan	Healthy Schools Curriculum	Addictive Behaviors	Bishkek 2006-2010	To develop the courses for the students of 9-11 grades	NA	Shifting costs and resources to more cost effective primary care	Improved quality of care
34. Kyrgyzstan	Clinical guidelines development	Acute Asthma in Children	Bishkek 2004-2005	Aim to develop evidence-based clinical practice guideline for primary care physicians on diagnostics and treatment of acute asthma in children	Decreased rates of mortality in children from asthma	Use of this, and the following, CPGs is expected to result in lower treatment costs	Improved evidence-based approach in the process of development CPG's
35. Kyrgyzstan	Clinical guidelines development	Acute Coronary Syndrome	Bishkek 2004-2005	Aim to develop evidence-based clinical practice guideline for primary care physicians on diagnostics and treatment of acute coronary syndrome	Decreased rates of mortality in patients with ACS	Shifting costs and resources to more cost effective primary care	Improved evidence-based approach in the process of CPG development
36. Kyrgyzstan	Clinical guidelines development	Hypertension in Pregnant Women	Bishkek 2004-2006	Aim to develop evidence-based clinical practice guideline for primary care physicians on diagnostics and treatment and prevention of hypertension disorders in pregnant women	Decreased rates of morbidity and mortality in pregnant women with hypertension disorders	Shifting costs and resources to more cost effective primary care	Improved evidence-based approach in the process of development CPG's
37. Kyrgyzstan	Clinical guidelines development	Upper Gastro-Intestinal Bleeding	Bishkek 2004-2006	Aim to develop evidence-based clinical practice guideline for primary care physicians on diagnostics and treatment of upper gastro-intestinal bleeding	Decreased rates of mortality in patients with upper gastro-intestinal bleeding	Shifting costs and resources to more cost effective primary care	Improved evidence-based approach in the process of development CPG's
38. Kyrgyzstan	Improve quality of care for patients with hypertension	Hypertension in adults	160 pilot sites 2004-2009	Aim is to improve quality of caare for hypertensive patients, including patient support for timely intake of medicines to manage blood pressure. This is done through training providers in patient counseling and care, and in providing hypertension drugs to pilot facilities in rural and remote areas.	Improved quality of care for people with hypertension	Shifting costs and resources to more cost effective primary care	CPG on use of hypertensive drugs and management of hypertension.
39. Kyrgyzstan	Bishkek, Kyrgyzstan/ Kansas City, Kansas	Pediatric cancer, burn care	Bishkek, Osh 1992-1999	Aim to establish a national pediatric cancer registry in Bishkek to track cancer morbidity and mortality rates in Kyrgyzstan- training seminars for Kyrgyz surgeons- establishment of an academic exchange program and a national pediatric cancer registry- initiated a cancer screening and treatment project in the township of Malli-Say- training for mothers with children with leukosis. Introduction of advanced burn treatment techniques.			Establishment of national burn registry and children cancer registry for Kyrgyzstan

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Country	Program Name	NCD Addressed	Program Location /Dates	Short Description of the Program	Clinical Outcomes	Cost Outcomes	Policy Outcomes/Sustainability
40. Kyrgyzstan	Healthy Family Program	Maternal anemia	Batken Oblast 2004-2007	The HF Program is focused on making pregnancy safer, breast feeding, IMCI, FP/RH	Updated national clinical proptocols on MPS based on WHO protocols; updated skills of the national trainers		
41. Kyrgyzstan	Drug Demand Reduction Program (DDRP)	Drug abuse prevention	Osh Oblast 2002-2007	Education of target populations on the risks of heroin/opiate use and promoting a healthy lifestyle; reinforce those cultural beliefs and practices that act as a barrier to drug use; provide access to much needed occupational and recreational alternatives to drug use; and support the development of a pragmatic and public health-based approach to drug demand reduction strategies at the national and local levels. Introduction of innovative drug prevention and treatment models through pilot programs termed Special Programs of Republican and Regional Significance (SPRRS).	Conducted training "12-step rehabilitation program"; trainings on the risks associated with drug use, healthy lifestyles and legal awareness; intravenous drug users (IDUs) received treatment readiness and rehabilitation services; drug users received low threshold treatment readiness services; at-risk youth participated in more than 15 types of alternative activities (sports, language classes, music, dancing, etc.) provided by the Youth Power Centers; counselors provided counseling/psychological services to at-risk youth to help cope with the broad range of problems known to lead to drug taking behavior; Break the Cycle Trainers conducted trainings for outreach workers to prevent IDUs assisting others to initiate injecting drugs.		
42. Kyrgyzstan	Healthy Communities Grant Program/Counterpart International	Hypertension, anemia, diabetes	Bishkek, Osh, Talas 2002-2005	To provide assistance to local NGOs, community-based organizations (CBOs) and community groups in developing their skills and capacities to proactively engage communities in identifying and implementing local health initiatives.	Patients can manage their own health condition, control high blood pressure, take needed medicines correctly; people understand that healthy nutrition can prevent many diseases, including hypertension, diabetes, and anemia.		
43. Macedonia	Macedonia passes smoking initiative	Lung Cancer, Heart Disease and Stroke	Country-wide 2005	Public Information Campaign - Two TV and radio advertisements, newspapers			
44. Moldova	Chisinau, Moldova/ Minneapolis, Minnesota Partnership	Trauma, Diabetes,	Chisinau 1994-1999	Improve Dialysis technique. More efficient first-responder trauma care.			
45. Moldova	Hearing Protection Center	Hearing Loss	Balti 2002-	Established state-of-the art hearing center			Expanded to include newborns, children, veterans, and elderly people in Balti and neighboring areas
46. Russia	The Quality Assurance Project in Tula Oblast	Arterial Hypertension	Tula 1998-1999	The components of the new system of AH care included a program for screening at-risk patients, evidence-based guidelines, and a health promotion program.	The number of patients being managed at the primary care level increased by 7.6 times. BP stabilization has been achieved in 69.4% of all patients being treated in the participating clinics.	The cost of hospital care has been reduced by 41%, and the cost of care at the primary care level has been increased by 39%, with an overall reduction in the cost of care for patients with hypertension of 23%	The oblast-wide scale-up included simultaneous implementation of the new system in just over 1000 primary care practices in Tula Oblast.
47. Russia	The School of Arterial Hypertension	Hypertension	Sarov Opened in May 2002	The main purpose of the School was to create a system which would enable early detection, prevention, and treatment of hypertension cases; develop a system for the Sarov physicians enabling effective care for patients with hypertension; raise awareness and knowledge about AH among local population; teach AH patients to manage and control the disease on their own (by maintaining healthy lifestyle and regularly taking hypertensive medication); and prevent complications related to arterial hypertension.	The number of new AH patients under observation increased from 595 in 1997 to 1,292 at the beginning of 2003 . Compared to previous year, percentage of patients with improvements increased by 24%, ambulance calls decreased by 83%, physical exercise increased by 31%, percentage of patients quitting smoking increased from 13% to 34%, patients whose cholesterol below 6.2 increased by 25% and hospitalizations decreased by 38% in December 2003. 81% of patients obtained desired level of blood pressure within six months of the program.	The number of sick leave days decreased by 52% Percent of ambulance calls reduced from 11% to 2%.	
48. Russia	Tomsk, Russia / Bemidji, Minnesota	CVD risk factors	SK/Tomsk 2001-2004	A continuous quality improvement (CQI) plan for improving hypertension control. The plan called for conducting a medical record audit of CVD risk factors to identify strengths and opportunities for improving clinical care.	The number of patients maintaining regular blood pressures increased by 58%. The rate of undiagnosed hypertension was reduced from 7% to 2% of the general population. Screening rates for cholesterol, diabetes and smoking history taking improved. More importantly, smoking rates declined from 24% to 19% and daily aspirin use (which is associated with decreased CVD morbidity) increased from 64% to 88%.		In the fall of 2003, the partners began disseminating the hypertension program (i.e. chart audit methodology) among seven other districts of the Tomsk oblast. Subsequently, in March 2004, the Tomsk Oblast Health Care administration adopted and instigated implementation of an oblast-wide program on the prevention and management of arterial hypertension. This, in turn, forced the partners to re-focus their attention and resources on the oblast AH program.

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Country	Program Name	NCD Addressed	Program Location /Dates	Short Description of the Program	Clinical Outcomes	Cost Outcomes	Policy Outcomes/Sustainability
49. Russia	Sarov, Russia/Los Alamos, New Mexico	Asthma	Sarov 1999-2004	Improve care and outcomes of asthmatic patients by effectively treating 500 adults and 125 children asthmatics	Among asthma patients monitoring their Peak Expiration Volume (PEV), approximately 95% had PEV greater than 80%, which indicates the asthma is in remission, as 100% PEV is the best individual value that a patient can achieve. The number of ambulance calls for asthma emergencies was reduced by half and the percentage of patients admitted to the hospital was reduced to one-fourth the original number (data not available). Compared to baseline data, more than 40% of patients showed a decrease in daytime and nighttime symptoms of asthma and overall patient satisfaction with the disease control doubled.	Ambulance calls for asthma emergencies reduced by 50%. Hospital admissions reduced by 25%	
50. Russia	Samara and Stavropol, Russia/Iowa	Hypertension	Samara Stravropol 1999-2004	Objectives are to improve practices in the emergency room for managing emergency/trauma patients, coordinate training seminars, develop protocols.	Improved care for heart attacks. Effectively treated heart attacks increased from 75% in 2000 to 90% in 2002. Drop-in pre-hospital mortality occurred.		
51. Russia	AHIA Dubna, Russia / LaCrosse, Wisconsin Partnership	Diabetes	Dubna 1992-1999	Identify the incidence of diabetes and establish a diabetic center for 150 diabetic patients and families that will include educational materials, lectures and teaching conferences to enhance understanding of diabetes and modern treatment methods, provide support systems, and enhance self care and responsibility.	As of 1996, three years after the School's opening, average insulin does levels declined 30% for Type I and 24.4% for Type II patients. Number of patients hospitalized with diabetes decreased by 80% and the length of hospital stay also reduced from 33 to 20 days.	Costs associated with diabetic patients declined by 40% (188 million rubles saved during first two years).	The curriculum developed by the partnership was approved by the Moscow Academy of Sciences and is being used in many Moscow schools. The success of this program and its curriculum produced a replication program into the Moscow Oblast, resulting in six diabetes schools in all
52. Russia	AHIA Dubna, Russia / LaCrosse, Wisconsin Partnership	Alcohol	Dubna 1992-1999	Develop a comprehensive multidisciplinary program including prevention, intervention, treatment and aftercare to deal with problems of alcohol and substance abuse. Prevention activities introduced in schools, mass media and clinics.	AA and Al-Anon groups organized in four locations, later two additional meetings were added. The partnership changed community attitudes about treating alcoholism as a disease that affects not only the alcoholic, but his/her family.		AA and Al-Anon groups were organized and are now regularly held in Dubna, Klin, Dmitrov, Zaprudnia and Taldom. As a result of partnership efforts, alcohol sales were restricted after 9:00 p.m. in Dubna liquor stores.
53. Russia	Nizhny Novgorod Alcoholism Treatment Program	Alcohol	Nizhny 1994-1997	The goal of the project is to create a model of administrative and social measures towards prevention of alcoholism.			
54. Russia	Chelyabinsk, Russia/ Tacoma, Washington	Asthma	Chelyabinsk 1998-1999	Chelyabinsk physicians and school officials completed a 6000-student survey of asthma symptoms of school children.			As a result of partnership efforts in the area of asthma treatment and education, international clinical standards and protocols have become more widely available to Chelyabinsk physicians resulting in a significant increase in nebulizer treatments that use beta agonists and corticosteroids.
55. Russia	Murmansk, Russia/ Jacksonville, Florida	Cancer	Murmansk 1992-1999	Objectives were to educate women about the diagnosis and treatment of breast cancer; initiate activity in early detection of breast cancer; introduce breast conservation therapy as a management option for breast cancer.			protocols for diagnosis and treatment of cancer of the prostate were prepared and distributed
56. Russia	Sakhalin, Russia/ Houston, Texas	Smoking	Sakhalin 2000-present	Objectives are to build on the successful preventive health care services amd model adolescent at-risk programs, development of prevention programs for adolescents (Teen Crisis Center offering programs on substance abuse), development and distribution of brochures on dangers of smoking to the community			
57.Russia	Khabarovsk, Russia/ Lexington, Kentucky	Smoking	Lazo Region 1999-2003	Objectives are to develop and implement a school-based educational program to address risk behaviors of youth 12-18 years old, to train the trainers workshops for partners, participation in a smoking cessation conference about a systematic approach to tobacco cessation, creation of the community-specific action plans for smoking cessation			
58. Russia	Samara and Stavropol, Russia/Iowa	Cancer	Samara Stravropol 1999-2004	Objectives are to establish Women's Wellness Centers at Polyclinics #9 and #15 and creation of patient education and breast health screening programs			
59. Russia	Snezhinsk, Russia/Livermore, California	Cancer	Snezhnisk 1999-2002	Mammography machine donated by the Snezhinsk City Administration, models for breast self-exams donated by the US partners, creation of the WWC's breast cancer support group.			

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Country	Program Name	NCD Addressed	Program Location /Dates	Short Description of the Program	Clinical Outcomes	Cost Outcomes	Policy Outcomes/Sustainability
60. Russia	Stavropol, Russia/ Cedar Rapids, Iowa	Cancer	Stravropol 1993-1998	Objectives are to improve the care of pediatric hematology patients, development of treatment protocols for leukemia and other pediatric cancers, establishing of a volunteer program at the Oncology Center (staffed by former cancer patients treated at the center)			
61. Russia	St. Petersburg, Russia/ Louisville, Kentucky	Cancer	St. Petersburg 1995-2000	Creating a Women's Wellness Center as an affiliate to Sokolov; the Center will serve as a highly visible model to comprehensively address and manage the health care needs of women through health promotion, education, early diagnosis, treatment and follow up including breast health			
62. Russia	No to Alcoholism and Drug Addiction	Alcoholism	Moscow 1994	Developing training course for health care providers to treat and prevent alcoholism			
63. Serbia	Save the Life, and others in CRDA	Breast cancer/Cervical Cancer	Uzice, Sabac, Valjevo, and parts of Western SerbiaDec. 2002-Feb. 2003 for Save the Life; other program dates vary	Specifically, Save the Life provided medical equipment and supplies to 3 main medical centers; medical screening for approx. 3500 women		Save the Life: USAID: $34,967; Total: $43,720 Save the Life 2: USAID: 37,614; Total: $51,811 All USAID spending: $776,085.30	Cervical and Breast cancer screening and treatment are now more accessible and patient-friendly. Led to Save the Life 2 Project in Dec. 2003.
64. Serbia		Children's rheumatic and neurological diseases	Banja Koviljaca	Renovation of pediatric facilities that combines traditional and modern medicines to help combat children's rheumatic and neurological diseases.	Additional 10 beds (serving 80 longterm care patients), and daily treatments for another 150 patients annually	USAID: $80,000	
65. Slovakia		Smoking	Banska, Martin 1997-2000	Health communities campaign. Martin established a Municipal Smoking Prevention Project	Percent of smokers declined from 50% 47% between 1998 and 2000		
66. Slovakia		Cervical Cancer	Kosice 1995-1999	improve screening programs for cervical cancer by: assessing problems in screening, diagnosis and treatment of cervical cancer and assessing laboratory protocols in cytology screening; cervical screening program			
67. Tajikistan	CME conference	Hypertension	Dushanbe, Hujand 12/20/2005 1/27/2006	Family doctors of Dushanbe and Family Medicine (FM) current trainees (in total 90 people) were focused on new Evidence Based approach of hypertension management: prevention, risk factors, non-medication and medication treatment. Doctors were provided with hypertension management algorithms according to the severity of disease. This topic is part of FM 6 month training program and 11 month TOT program This topic was also discussed during 3 days training on introducing family doctors of Dushanbe to continuing post graduates (CPGs) (in total 200 family doctors).	FM trainers better able to provide quality care	Likely reduction in hospital costs for treating patients suffering from hypertension related conditions.	
68. Tajikistan	FM TOT course	Menstrual and menopausal conditions; Respiratory and heart conditions; Prevention of adult diseases; Hypertension; Joint and back pain; Minor surgery; Oncology; Neurology; Inflammatory diseases ; Psychotic diseases; Endocrinology; Kidney Diseases, Skin Diseases, and Emergency	Dushanbe 2003-present	ZdravPlus supported 11 month TOT program in Family Medicine which trained 28 trainiers in Tajikistan in addition to 12 trainers who participated in the training program in Bishkek Kyrgyzstan. Among other topics the training included the NCDs already mentioned. The TOT was part of an overall policy in Tajikistan of gradual transition to primary health care.	FM trainers better able to provide quality training in NCDs to trainees	Likely reduction in hospital costs for treating patients suffering from hypertension related conditions.	

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Country	Program Name	NCD Addressed	Program Location /Dates	Short Description of the Program	Clinical Outcomes	Cost Outcomes	Policy Outcomes/Sustainability
69. Tajikistan	FM retraining program	Menstrual and menopausal conditions; Respiratory and heart conditions; Prevention of adult diseases; Hypertension; Joint and back pain; Minor surgery; Oncology; Neurology; Inflammatory diseases ; Psychotic diseases; Endocrinology; Kidney Diseases, Skin Diseases, and Emergency	Dushanbe, Hujand, Kurgan-Tyube 2005 - present	ZdravPlus provided technial support to a 6 month FM retraining program in Family Medicine which used ZdravPlus trained trainers. These trainees received updated medical information and were able to prectice their new skills on a number of topics including the NCDs mentioned. Over 400 doctors have been trained in Tajikistan under various programs funded by the MOH, WHO, WB and AKF.	Physicians able to provide higher quality care to their patients	Shifting costs and resources to more cost effective primary care	
70. Tajikistan	CME seminars	Chronic Obstructive Lung Diseases	Dushanbe 4/18/2005 4/21/2005	Family doctors were provided with updated information about epidemiology, risk factors, differential diagnosis, classification and treatment of Chronic obstructive lung diseases	Improved patient care	Shifting costs and resources to more cost effective primary care	
71. Tajikistan	CME seminars	Bronchial Asthma	Dushanbe 4/26/2005 - 4/29/2005	Family doctors were provided with updated information about risk factors, prevention, differential diagnosis and treatment of Bronchial asthma	Improved patient care	Shifting costs and resources to more cost effective primary care	
72. Tajikistan	Dushanbe, Tajikistan/ Boulder, Colorado	Health Partnerships	Dushanbe 1994-1998	Objective is to conduct training courses focusing on issues such as breast self-examination.			
73. Tajikistan	Healthy Family Project	Maternal anemia	Dushanbe city, Khatlon Oblast 2002-2007	The program is focused on Safe Motherhood, IMCI, RH/FP	Training of health care providers; support birth planning activities involving pregnant women		
74. Tajikistan	Drug Demand Reduction Program (DDRP)	Drug abuse prevention	Dushanbe city, Khojent, Khorog 2002-2007	Education of target populations on the risks of heroin/opiate use and promoting a healthy lifestyle; reinforce those cultural beliefs and practices that act as a barrier to drug use; provide access to much needed occupational and recreational alternatives to drug use; and support the development of a pragmatic and public health-based approach to drug demand reduction strategies at the national and local levels. Introduction of innovative drug prevention and treatment models through pilot programs termed Special Programs of Republican and Regional Significance (SPRRS).	Conducted training "12-step rehabilitation program"; trainings on the risks associated with drug use, healthy lifestyles and legal awareness; IDUs received treatment readiness and rehabilitation services; drug users received low threshold treatment readiness services; at-risk youth participated in more than 15 types of alternative activities (sports, language classes, music, dancing, etc.) provided by the Youth Power Centers; counselors provided counseling/psychological services to at-risk youth to help cope with the broad range of problems known to lead to drug taking behavior; Break the Cycle Trainers conducted trainings for outreach workers to prevent IDUs assisting others to initiate injecting drugs.		DDRP supported and took part in the first session of the Government Coordination Council on Drug Abuse Prevention organized in accordance with a resolution of the President in order to co-ordinate the drug abuse prevention activities of ministries, GO committees and NGOs. The Drug Control Agency (DCA) was appointed as the focal point for conducting the Council sessions. The Council is chaired by the Deputy Prime Minister of RT. The Deputy heads of relevant ministries and committees are members of the Council. At its first session, the Council members adopted a plan for national level activities in drug use prevention for 2005-2008, which includes conducting a permanent sociological study of the drug use situation, training for a wide spectrum of professionals such as journalists, social service and law enforcement staff, secondary school teachers, the production of TV and radio programs on the issue, drug use prevention in prisons etc.
75. Tajikistan	Healthy Communities Grant Program/Counterpart International	Anemia, diabetes, children trauma	Dushanbe, KurganTeppa, Rasht 2002-2005	To provide assistance to local NGOs, community-based organizations (CBOs) and community groups in developing their skills and capacities to proactively engage communities in identifying and implementing local health initiatives.	Patients can manage their own health condition, control high blood pressure, take needed medicines correctly; people understand that healthy nutrition can prevent many diseases, including diabetes and anemia; parents and children know how to prevent traumatism.		

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Country	Program Name	NCD Addressed	Program Location /Dates	Short Description of the Program	Clinical Outcomes	Cost Outcomes	Policy Outcomes/Sustainability
76. Tajikistan	Promoting access to primary health care and preventing mulnutrition in rural population/Action Against Hunger, Tajikistan	Prevention of mulnutrition	Khatlon region 2000-2003	To reduce the immediate risk of morbidity / mortality in women of childbearing age and their children ° To enhance, in the mid-term, capacities of health facilities at the village level ° To improve the access to health care services for the population □ To support the Ministry of Health on its reforms on Primary Health Care	Training of medical staff from the primary healthcare level, nurses and midwives from medical houses and Rural Physician Ambulatoria (SVA); health education sessions for women; antenatal consultations for pregnant women; 10257 children screened in medical houses and SVAs; 4509 children received consultations; visits of health specialists in rural areas.		
77. Turkmenistan	Healthy Lifestyles TOT	Adult Chronic Conditions	Ashgabat April, 2002 -	The first course of two-tier Healthy Lifestyles Trainings TOT conducted by ZdravPlus Kyrgyzstan Trainers for teachers of Turkmen Medical Schools and Family Medicine Training Center. The training was focused on promotion of healthy lifestyles to prevent adult chronic dieases associated with smoking and alcohol abuse -20 Physicians were trained as trainers	Trainers able to provide training to family physicians on Healthy Lifestyles	Reduction of smoking and alcohol use is associated with reduction of adult non-communicable disease and reduction in costs to health system to manage these diseases.	Training content and methods are institutionalized into programs of healthy lifestyles.
78. Turkmenistan	Healthy Lifestyles Training	Adult Chronic Conditions	All Five Velayats (Provinces) of Turkmenistan and Ashgabat 2005 -	Healthy Lifestyles Trainings conducted by ZdravPlus for Family Physicians. Training focuses on promotion of healthy lifestyles and prevent Adult Chronic Conditions associated with smoking and alcohol abuse - 217 Physicians Trained. World Health Day 2005 supported by ZdravPlus	Trained physicians able to better council patients on adopting healthier lifestyles and avoiding/ discontinuing adult chronic conditions such as smoking and alcohol dependency	Reduction of smoking and alcohol use is associated with reduction of adult non-communicable disease and reduction in costs to health system to manage these diseases.	Training content and methods are institutionalized into programs of healthy lifestyles.
79. Turkmenistan	Health Partnerships	Trauma	Ashgabat 1994-1998	To create sustainable capacity within countries to effectively respond to emergencies ranging from routine medical cases to trauma to disasters involving mass casualties.	Increased capacity in the country to provide quality training and education in emergency and disaster medicine (EDM); improved knowledge and skills in first aid and emergency care among first responders, medical providers, and other targeted groups trained through EMS Training Center.		
80. Turkmenistan	Health Partnerships	Cancer	Ashgabat city, all five velayats 2001-2006	Through two established Family Medicine Training Centers to train doctors and nurses on breast cancer prevention, self-examination techniques.			The program was scaled up to train doctors and nurses from all over Turkmenistan with Government of Turkmenistan funding support.
81. Turkmenistan	Healthy Communities Grant Program/Counterpart International	Breast cancer prevention, hypertension, anemia	Ashgabat, Turkmenbashi etrap 2002-2005	To provide assistance to local NGOs, community-based organizations (CBOs) and community groups in developing their skills and capacities to proactively engage communities in identifying and implementing local health initiatives.	Patients can manage their own health condition, control high blood pressure, take needed medicines correctly; people understand that healthy nutrition can prevent many diseases, including hypertension and anemia; women are aware how to prevent breast cancer.		
82. Uzbekistan	Mahalla Health Initiative Groups	Hypertension	Ferghana Ongoing	The goal of this initiative was to utilize the mahalla and its opinion leaders to foster greater collaboration and cohesion among health centers, SVPs and their respective mahallas. The seminar on hypertension was an innovative approach with the involvement of a religious leader. The Hypertension Campaign will soon expand to areas out side Ferghana Oblast	Improved utilization of quality services	Shifting costs and resources to more cost effective primary care	Established links with the community leaders to identify health problems and disseminate health promotion on healthy life styles.
83. Uzbekistan	Health Promotion Campaign on Hypertension	Hypertension	Nationwide 2005	Mass media campaign such as a brochure and poster, as well as a script of SOAP OPERA, and TV and radio spots	Improved utilization of quality services	Shifting costs and resources to more cost effective primary care	
84. Uzbekistan	Quality of Care in Ferghana	Hypertension	Ferghana 2003-	□ 2003, Conference on the first results of Quality Improvement project in Hypertension and other diseases □ 2003, Training of SVP chiefs and nurses in Quality Improvement approaches and Hypertension standards and indicators in Kuva, Tashlak and Yazavan	As a results of the conference the quality Improvement project on Hypertension have been spread in three rayons in Ferghana (Kuva, Tashlak and Yazyavan)	Shifting costs and resources to more cost effective primary care	

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Country	Program Name	NCD Addressed	Program Location /Dates	Short Description of the Program	Clinical Outcomes	Cost Outcomes	Policy Outcomes/Sustainability
85. Uzbekistan	Quality of Care	Hypertension	Ferghana 2004-	Scale up Conference of the Quality Improvement project in Hypertension and other diseases Training of SVP chiefs and nurses in Quality Improvement approaches and Hypertension standards and indicators in Bagdod, Kuvasay and Beshariq Focus group discussion with patients and in depth interviews with pharmacists and doctors on the access to drugs on Hypertension Qualitative survey at Tashlak Central Rayon Hospital on the quality of care to patients with Hypertension Journey to Quality Bulletin produced on a quarterly basis to highlight ongoing issues and achievement on the Hypertension Quality Improvement Project	As a results of the conference the quality Improvement project on Hypertension have been spread in three rayons in three more rayons (Kuvasay, Bogdod, Beshariq) Journey to Quality Bulletin in Russian disseminated among GPs and health policy staff	Shifting costs and resources to more cost effective primary care	
86. Uzbekistan	Quality of Care (nationwide)	Hypertension	Ferghana 2005-	Evidence based medicine center have developed clinical practice guideline on the management of Hypertension (10 March, 2005) Dissemination of CPGs on Hypertension throughout Ferghana Training on the use of CPG on Hypertension at 6 rayons of Ferghana	After dissemination of CPGs and scale up of quality monitoring system, by the end of 2005, there was significant improvement observed at 6 rayons of Ferghana, where Quality Improvement project was introduced: Indicator on the level of screening for high blood pressure of patients older than 18 is 69% Indicator on the level of correct diagnosis of Hypertension is 77% Indicator on the level of appropriate treatment prescription to patients with Hypertension is around 83% Indicator on the effectiveness of treatment of patients with Hypertension (BP is under control) is about 63% Indicator on risk stratification of patients diagnosed with Hypertension is around 74%	Shifting costs and resources to more cost effective primary care	
87. Uzbekistan	Quality of Care	Hypertension	Yazyavan, Quva & Besharyk Rayons, Ferghana Oblast 2003	46 family doctors trained in a ZdravPlus updated hypertension teaching module from each rural clinic in the 3 rayons.	Pre test scores were 64%, post-test scores 84%, an increase in knowledge and skills of 20%	Shifting costs and resources to more cost effective primary care	
88. Uzbekistan	General Practitioner's Association of Uzbekistan	Hypertension	Nationwide 2004	The second bulletin of the Association focused on Hypertension	Indicator on the level of screening for high blood pressure of patients older than 18 is 69%	Shifting costs and resources to more cost effective primary care	
89. Uzbekistan	Quality of Care in Ferghana	Hypertension	Ferghana 2002	Teams of general practitioners and specialists from 53 primary health care facilities and polyclinics in Ferghana developed QI. A first step was to have a nurse in the waiting area measure and record the blood pressure of each individual patient who came to the facility, record the results in a journal, and inform the doctor if a patient's blood pressure was over 140/90 for a follow up.	The detection of hypertension cases increased from 6.6 to 8.6 percent of all patients in pilot sites. Accurate diagnosis (measuring blood pressure four times) rose to 100 percent pilot facilities, compared to around 68 percent non pilots. In Toshloq rayon, the proportion patients receiving oral treatment instead of injections rose from about 60 to 85 percent. Overall, more patients have their blood pressure under control (90 percent in pilot FGPs).	Shifting costs and resources to more cost effective primary care	
90. Uzbekistan	Central Asia Sport and Health Education Program	Community Health, Substance Abuse and Dependence, Drug Addiction	Ferghana valley 2002-2006	Supports "School Camps," which provide youth attending local schools the opportunity to receive athletic, health, conflict prevention, leadership, and computer training.	Improved utilization of quality services	Shifting costs and resources to more cost effective primary care	
91. Uzbekistan	Zdrav-Plus School Health Curriculum	First aid, allergies, bad habits (smoking, the drug habit, alcoholism)	Nationwide 2001-2005	ZdravPlus (in 2001 - 2003), through subcontract with Central Asia Free Exchange (CAFÉ), developed a methodical guideline on conducting health lessons for grades 1 - 8 in public education facilities. Some of the modules include: healthy life style, first aid, bad habits etc. In addition in 2005 ZdravPlus together with AED had TOT for republican level teachers from teachers' retraining institutes of each oblast of Uzbekistan, where they teach lessons on "Healthy generation and healthy way of life".		Shifting costs and resources to more cost effective primary care	In September 2003 this methodical guideline was approved by the Ministry of Education of Republic of Uzbekistan and 2nd scientific methodical Council of "Environment and health" department of Republican Education Center.
92. Uzbekistan	Quality of Care	Emergency cardiac care	Tashkent International Medical Clinic 2001-2004	2 day training for selected GP trainers and GPs	Later graduates presented with a valid certificate of competency in ACLS	Shifting costs and resources to more cost effective primary care	

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Country	Program Name	NCD Addressed	Program Location /Dates	Short Description of the Program	Clinical Outcomes	Cost Outcomes	Policy Outcomes/Sustainability
93. Uzbekistan	AIHA Tashkent and Ferghana, Uzbekistan / Atlanta, Georgia Partnership	Trauma	Tashkent and Ferghana 2000-2003	Improve the emergency first response system in Oblast, promoting donation of modern ambulances, their effective dispatch and use. Ensure full operation of the Poison Control Center at the Republican Center for Emergency Medicine (RCEM) in Tashkent; initiate a Poison Control Center in Ferghana; and address sustainability of these centers	After the new EMS unit was established, the percentage of effectively treated cases of acute myocardial infarction was increased from 75% in 2000 to 90% in 2002. The Ferghana RCEM reported a significant drop in pre-hospital mortality		As a result of the partnership's efforts, the Fergana Affiliate of the Republican Center for Emergency Medicine (F-RCEM) established a monitoring and analysis mechanism for trauma cases and initiated work with local and national governmental agencies to identify ways to reduce trauma from accidents occurring on the roador at home, as well as those related to substance abuse. Poison Control Centers were established at the Tashkent RCEM and in Ferghana; software to support activities of these centers was purchased through the partnership.
94. Uzbekistan	AIHA Tashkent, Uzbekistan / Chicago, Illinois Partnership	Diabetes, Cancer	Tashkent 1992-2000	Seminars conducted for nurses related to diabetic care included "Introduction of National Diabetic Dishes" and "Cooking National Diabetic Dishes." . A leaflet on national diabetic dish preparation is given to each patient before he/she is discharged from the hospital. During treatment, nurses also spend considerable time talking with patients about the importance of their diabetic therapy. Opening of the Women's Wellness Center to educate women on breast self-examination; focus on diagnostics of cervical cancer.	The proportion of patients needing repeated hospitalization was reduced in one year from 21 to 17 percent (1996 to 1997).		
95. Uzbekistan	Healthy Family Project	Maternal Anemia	Tashkent city, Kashkadarya, Surhandarya oblasts 2002-2007	The Program is focused on Safe Motherhood, IMCI, FP/RH	Training program created; health service providers, MOH staff, stakeholders were trained;		National adoption of international standards in SM policies; introduction of safe motherhood (SM) training modules into pre-service and in-service training curricula in about 80% of the country's medical institutions. Expansion of the program to additional rayons.
96. Uzbekistan	Drug Demand Reduction Program (DDRP)	Drug abuse prevention	Tashkent, Namangan, Samarkand, Termez, Fergana 2002-2007	Education of target populations on the risks of heroin/opiate use and promoting a healthy lifestyle; reinforce those cultural beliefs and practices that act as a barrier to drug use; provide access to much needed occupational and recreational alternatives to drug use; and support the development of a pragmatic and public health-based approach to drug demand reduction strategies at the national and local levels. Introduction of innovative drug prevention and treatment models through pilot programs termed Special Programs of Republican and Regional Significance (SPRRS).	Conducted training "12-step rehabilitation program"; trainings on the risks associated with drug use, healthy lifestyles and legal awareness; IDUs received treatment readiness and rehabilitation services; drug users received low threshold treatment readiness services; at-risk youth participated in more than 15 types of alternative activities (sports, language classes, music, dancing, etc.) provided by the Youth Power Centers; counselors provided counseling/psychological services to at-risk youth to help cope with the broad range of problems known to lead to drug taking behavior; Break the Cycle Trainers conducted trainings for outreach workers to prevent IDUs assisting others to initiate injecting drugs.		
97. Uzbekistan	Healthy Communities Grant Program/ Counterpart International	Cancer prevention, anemia	Tashkent, Samarkand 2002-2005	To provide assistance to local NGOs, community-based organizations (CBOs) and community groups in developing their skills and capacities to proactively engage communities in identifying and implementing local health initiatives.	Patients educated on cancer prevention, how to diagnose first signs of cancer; people understand that healthy nutrition can prevent many diseases, including anemia.		

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Annex 2

Program Name	NCD Addressed	Program Location/ Dates	Short Description of the Program	Clinical Outcomes	Cost Outcomes	Policy Outcomes/Sustainability
The Mtskheta-Mtianeti Regional Health Administration	Cardiovascular Disease	Mtskheta-Mtianeti Region, Georgia 1999- 2004	Various preventive care programs including high blood-pressure control and nutrition program. Developed a community-based program aimed at increasing detection and control of high blood pressure.	Over 470 hypertensive patients have benefited from the program, and 53% are able to control their condition with lifestyle changes and available medications. Since the beginning of the program, steady decrease in deaths from hypertension. The rates of hospitalization and complications have been lowered. Overall, average decrease of 12 percent and 10 percent, respectively, in the systolic and diastolic pressures levels compared to baselines. Decline in mortality due to CVDs	$7.50 per patient enrolled in study. Low-cost, and uses a train-the-trainers approach.	Program expanded to 5 districts, initially from Dusheti.
The Quality Assurance Project in Tula Oblast	Arterial Hypertension	Tula, Russia 1998-1999	The components of the new system of AH care included a program for screening at-risk patients, evidence-based guidelines, and a health promotion program.	The number of patients being managed at the primary care level increased by 7.6 times. BP stabilization has been achieved in 69.4% of all patients being treated in the participating clinics.	The cost of hospital care has been reduced by 41%, and the cost of care at the primary care level has been increased by 39%, with an overall reduction in the cost of care for patients with hypertension of 23%	The oblast-wide scale-up included simultaneous implementation of the new system in just over 1000 primary care practices in Tula Oblast.
AHIA Dubna/ LaCrosse, Wisconsin Partnership	Diabetes	Dubna, Russia 1992-1999	Identify the incidence of diabetes and establish a diabetic center for 150 diabetic patients and families that will include educational materials, lectures and teaching conferences to enhance understanding of diabetes and modern treatment methods, provide support systems, and enhance self care and responsibility.	As of 1996, three years after the School's opening, average insulin does levels declined 30% for Type I and 24.4% for Type II patients. Number of patients hospitalized with diabetes decreased by 80% and the length of hospital stay also reduced from 33 to 20 days.	Costs associated with diabetic patients declined by 40% (188 million rubles saved during first two years).	The curriculum developed by the partnership was approved by the Moscow Academy of Sciences and is being used in many Moscow schools. The success of this program and its curriculum produced a replication program into the Moscow Oblast, resulting in six diabetes schools in all.
Sarov/Los Alamos, New Mexico	Asthma	Sarov, Russia 1999-2004	Improve care and outcomes of asthmatic patients by effectively treating 500 adults and 125 children asthmatics	Among asthma patients monitoring their Peak Expiration Volume (PEV), approximately 95% had PEV greater than 80%, which indicates the asthma is in remission, as 100% PEV is the best individual value that a patient can achieve. The number of ambulance calls for asthma emergencies was reduced by half and the percentage of patients admitted to the hospital was reduced to one-fourth the original number (data not available). Compared to baseline data, more than 40% of patients showed a decrease in daytime and nighttime symptoms of asthma and overall patient satisfaction with the disease control doubled.	Ambulance calls for asthma emergencies reduced by 50%. Hospital admissions reduced by 25%	Not Available

ANNEX 3: List of Injury Prevention Programs in Eastern Europe & Eurasia Region

SNO.	Programs	Short Description	Outcomes	Policy Outcomes	Funding Source
	Road Safety- Seat Belt usage				
1	Buckle up your kid! In Poland (2002-2003)	To increase awareness about the safe transport of children in vehicles and promote the use of child restraints in vehicles.	The campaign, initiated in cooperation with GRSP, evoked great interest in the public and media. Support provided by the National Road Safety Council and organisations such as PIMOT (Industrial Automotive Institute) resulted in reliable expert opinions on the safe transport of children under age 12 in cars and enabled campaign organisers to prepare high-quality information and training materials.		Asian Development Bank
2	Seat Belt Campaign in Hungary (2004)- also called "tomato campaign"	To convince the drivers and the passengers of the importance of safety belt usage.	A 25 second TV spot was shown nation-wide at prime time on all the national networks. Press and other information campaigns were organised.		Global Road Safety Partnership and FIA
3	Seat belts use in EU	Law was introduced which made the use of seat-belts is mandatory.	Front seat belt usage rose from 37% before to 95% after the introduction of law. Within a short period, there was 35% reduction in hospital admissions for road traffic injuries		Federal Ministry of Transport, Innovation and Technology (BMVIT)
4	Seat Belt Use in Russian Federation	An awareness campaign was launched to address why seatbelts should be worn and to correct incorrect seatbelt assumptions that were held by members of the public. This was followed by an enforcement campaign to reinforce the fact that the use of seat belts is law.	An increase in wearing rates in urban areas (Yuzhno-Sakhalinsk) from 3.8% to 19.9% and on rural roads from 26.8& to 55.8%. It is predicted that this will help in reduction of road traffic inhuries (results not yet available)		Global Road Safety Partnership
	Road Safety- Black Spot Treatment				
5	Black Spot Treatment in Poland	In order to prevent crashes and loss of life in the interim, these spots were selected for special signing. Highly conspicuous traffic signs were created in order to direct the attention of the drivers to the particular danger they are approaching.	The number of crashes at the spots where unconventional signs were posted decreased by 35%, which was accompanied by a 23% reduction in the number killed and 28% fewer injuries.		Global Road Safety Partnership
6	Black Spot Signing in Poland	It is identified as one of the main areas for action in Poland.	Resulted in improved distinctiveness, better visibility and enhanced perception of this kind of signing, which is an important factor behind faster reaction of drivers and has an immediate positive effect on road safety situation in the site of location.		Global Road Safety Partnership
7	Black Spot Improvements in Poland	To improve visibility in poor weather conditions, during day and night.	3M and its partners developed a project to illustrate the possibilities for safety gains at three black spots using high performance reflective materials on traffic signs where conspicuity was considered a problem.	The results and techniques used have been communicated in several presentations, a press conference and during training courses.	Global Road Safety Partnership

ANNEX 3: List of Injury Prevention Programs in Eastern Europe & Eurasia Region

SNO.	Programs	Short Description	Outcomes	Policy Outcomes	Funding Source
	Road Safety- Safe driving				
8	Safety For All in Poland	Schools are provided with an educational kit to carry out road safety lessons for children and annual international contest is held.	Now 8% of Polish schools use materials developed for the Safety for All initiative.	The Ministry of Education has been instrumental in integrating the programme into the Polish school system.	Global Road Safety Partnership
9	Cool head in helmet in poland (2005)	To build awareness among children, youth and parents of the risks resulting from not wearing helmets during cycling, skateboarding or rollerblading.	Research commissioned by Michelin found that 67% of children do not wear helmets when riding bicycles. Younger children aged 4-9 years wear helmets more frequently. Youth aged 10-15 years are reluctant to wear helmets; helmets are worn by only 27% of them. The mistaken belief of 52% of parents that the helmet is redundant because their children ride carefully and in safe places is the main reason for children not wearing helmets. Only 32% children that do not wear helmets declare the intent to purchase and wear one.		Global Road Safety Partnership
10	Don't Get Mad Campaign in Poland (2005)	Highlight the issue of respectful driving and mitigating aggressive driving	While the campaign seemed to have little real effect on driver behaviour, the evaluation indicated that more people were inclined to self-criticism and were ready to recognize their own misconduct behind the wheel.	In addition, it was determined that campaigns aiming to change human behaviour must be targeted on a specific type of conduct and supported by increased enforcement.	Global Road Safety Partnership
11	Transfer of Knowledge in Romania (2005)	Forums and symposia from the field of road safety, automotive engineering, road transportation, vehicle sales, technical inspections, repairs or expertise were developed.	In a series of four, two-day interactive seminars, GRSP and partners are contributing staff and experts as presenters to he trainer seminars and to co-operate with the target audience on drafting a reader on road safety for use at 8 Romanian universities.		Global Road Safety Partnership
12	"The Policeman is my friend " in Romania (2003)	To improve the road safety knowledge of school children.	The project is fully supported by the relevant authorities (Traffic Police and Ministry of Education and Research).	Partners intend to continue implementing the project in other communities in Romania.	Global Road Safety Partnership
13	Junior Bike program in Romania (2004)	Campaign to raise awareness among youth (4 – 11 years old) about the importance of using cycle helmets and about road safety.	Some 1132 people participated at the 2005 event.		Global Road Safety Partnership
14	Better Road Signals in Bucharest, Romania	To raise awareness about the road safety benefits of high quality road signs indicating direction.			
15	Safer Way to School in Bucharest, Romania	To improve the surroundings of five schools in terms of road safety	Improvement was seen in schools	This program has been extended to other schools as well	Global Road Safety Partnership
16	Improved Vehicles in Romania (2005)	To raise awareness among motor vehicle drivers about the importance of proper tyre maintence and in particular tyre pressure as a factor in preventing traffic crashes.			Global Road Safety Partnership

ANNEX 3: List of Injury Prevention Programs in Eastern Europe & Eurasia Region

SNO.	Programs	Short Description	Outcomes	Policy Outcomes	Funding Source
17	A Degree Driver (1st Edition) program in Poland	To raise the profile of responsible driving and appoint a group of youth to raise awareness among their peers	A "safe driving" contest involving young drivers was conducted to assess their compliance with highway cose and good behavior in road traffic.	The National Road Safety Programme, GAMBIT 2000, identified young drivers as a critical area and made a series of recommendations to target this risk group.	Global Road Safety Partnership
18	Use of Speed Cameras in Europe	To Promote use of speed cameras that records photographic evidence of a speeding offence	50% reduction in crashes was seen	It is a highly effective means of speed enforcement.	
	Road Safety- Occupational Road safety				
19	Workshop on Safety of HGV in Poland	To provide an overview of safety for HGV, identify common safety problems and draft solutions to the problems.	Following the presentations, two working groups were formed to identify common safety issues and draft action proposals.		Global Road Safety Partnership
20	Policy Information system in poland	To establish an on-line information system on country's road safety situation, actions taken, best practices and a knowledge base.	The results of this study were used as a basis for developing a road safety policy information system.		Global Road Safety Partnership
21	Safe Fleet Guidelines in Poland (2005)	To formulate policies towards occupational road safety for company drivers etc.	Partners have focused in 2005 on creating "good practice" guidelines on occupational road safety for Polish companies and organisations with vehicle fleets using the expertise of GRSP and RSP partners and recognised examples of good practices in other countries.	The guidelines were produced in 2005 and launched with an implementation and communications strategy in January 2006.	Global Road Safety Partnership
22	Training for Ambulance Drivers in Hungary (2004)	To provide training to professional ambulance-drivers, to strengthen their abilities to avoid accidents and master high speed dangers.	More than 100 ambulance-drivers from 50 settlements in 10 counties participated in the training courses. In addition, training for 13 of the participants was organised in the “driving style park” of the Hungarian Automobile Club.	The project will continue in 2006, part of which will include training for ambulance-drivers in other regions.	Global Road Safety Partnership
23	MCTP in Eastern Europe (1992)	MCTP is one of the European Union’s initiatives to develop a safer and more efficient transport system in the Phare countries in Central Europe.	An action plan to improve the enforcement of traffic laws has been prepared.	Based on the report by ITC, recommendations are given with regard to special training-programmes for the police Forces in all the Phare countries, the use of all kinds of enforcement instruments and the implementation of a new approach of road safety activities.	Institute for traffic care
	Pre-hospital care: Situation Analysis				
24	Situational Assessment of Rescue Services in Poland	Situational assessment to gain a deeper understanding of the organisation, resources available, skills, knowledge and operations of the rescue system with a view to identifying areas that could be improved.	Findings indicate that the three sectors involved in rescue services are well equipped and display high experience in conducting life-saving procedures. There is nevertheless need to deal with the problem of inefficient coordination among the individual subdivisions of the rescue system on the scene of accident.	In a second phase of the project (2006) interventions will be implemented to improve coordination.	Global Road Safety Partnership
25	Emergency Preparedness and Response in Poland	To generate action on the part of key stakeholders to increase the effectiveness of the pre-hospital care and emergency preparedness and response systems			Global Road Safety Partnership

ANNEX 3: List of Injury Prevention Programs in Eastern Europe & Eurasia Region

SNO.	Programs	Short Description	Outcomes	Policy Outcomes	Funding Source
	Pre-hospital care: Infrastructure Program				
26	Emergency Medical services in Tashkent, Uzbekistan - AIHA Uzbekistan / Georgia Partnership	To improve the emergency first response system, promoting donation of modern ambulances, their effective dispatch and use.	The %of effectively treated cases of acute myocardial infarction was increased from 75% in 2000 to 90% in 2002. The Ferghana RCEM reported a significant drop in pre-hospital mortality	The F-RCEM established a monitoring and analysis mechanism for trauma cases and initiated work with local and national governmental agencies to identify ways to reduce trauma from accidents occurring on the road or at home, as well as those related to substance abuse.	USAID (AIHA)
	Alcohol and Substance abuse				
27	A Degree Driver Disco Prgramme in Poland	To raise awareness about the effect of alcohol on the body and prevent "Disco Crashes"	The disco DJs, who serve in many regions as idols for local youth, acted as spokespersons advocating against impaired driving. More than 5000 Polish youth participated in the programme. In addition, chauffeurs provided by Renault stood ready to drive guests home, who had been drinking.	An additional component of the programme was an online survey "Any idea about drink driving?" Data collected from the responses was shared with partners with the goal of using the new knowledge to develop future strategies and initiatives.	Global Road Safety Partnership
28	Dubna, Russia / LaCrosse Wisconsin Partnership in Russia (1992-1999)	Comprehensive multidisciplinary program to deal with problems of alcohol and substance abuse.	AA and Al-Anon groups organized in four locations, later two additional meetings were added. The partnership changed community attitudes about treating alcoholism as a disease that affects not only the alcoholic, but his/her family.	As a result of partnership efforts, alcohol sales were restricted after 9:00 p.m. in Dubna liquor stores.	USAID (AIHA)
29	Nizhny Novgorod Alcoholism Treatment Program in Russia (1994-1997)	To create a model of administrative and social measures towards prevention of alcoholism.			CONNECT/US-RUSSIA, a private nonprofit organization
30	No to Alcoholism & Drug Addiction in Moscow, Russia (1994)	To develop training course for health care providers to treat and prevent alcholism			Non-progit Russian foundation NAN
31	Drug and Alcohol Rehabilitation in Belarus	Briefly mentioned in an article, no other info available.			
32	Project Northland in Croatia (2004)	Community based alcohol prevention program designed for school children between the ages of 10 and 14 that strived to reduce / delay alcohol usage.	Over 1,300 sixth graders participated to address alcohol abuse in youth. Implemented by 13 schools		USAID
33	Health Partnerships in Armenia (2003 - 04)	To provide healthy lifestyle and substance abuse education.	Surveys suggested significant increase in health knowledge, perceived health status. Utilization of preventive screening services increased. Domestic Violence, chronic pain, and smoking decreased.	Greater accessiblity of health services	USAID (AIHA)
	Domestic Violence: Against Women and Children				
	Education Based				
36	Child protection in Croatia (Since 1997)	The project sets out to draw attention to child victims of violence and generally to victims of domestic violence in our society.	For the purpose of influencing the attitudes of the community and the public in general, the Association holds monthly MiRTa open Radio Shows – live, with experts discussing various topics related to the upbringing of children and youngsters.	The next step planned within the project is to establish a Safe House for Victims of Violence in the Family.	MiRTa, a NGO

ANNEX 3: List of Injury Prevention Programs in Eastern Europe & Eurasia Region

SNO.	Programs	Short Description	Outcomes	Policy Outcomes	Funding Source
	Care-Centers based				
37	Violence Against Women - Prevention & Care in Bulgaria (Since 1995)	The Nadja Centre was established as a care centre for women victims of violence and/or street violence, providing a variety of services	According to the Nadja Centre's own statistics, there is a manifold increase of the number of women who used the Centre's programmes for the 1997 year compared with the year 1996 (e.g. there were 960 help-line consultations for the year '97 compared with 26 for the year '96)	The Center has succeeded in creating its own identity and in establishing its vision of the way it could effectively provide help to women and could bring about change in social attitudes, policies and practices in respect to the issues of violence against women.	Najda Foundation in Bulgaria
38	Support services for victims of domestic violence in Bulgaria (Since 2000)	The NGO "Open Door Centre" has been opened, the only shelter for women victims of domestic and male violence for North Bulgaria.	For the last 2 years more than 400 women have been successfully treated in the shelter. A statistic, made by the centre, shows, that 87 per cent of them are victims of psychological violence, 47 per cent of physical violence and 10 per cent of sexual abuse.	It has been successful in providing shelter to victims of violence. Such initiatives are supported and encouraged in Bulgaria. Another field is working on prevention of domestic violence in schools.	Financed partly by State and partly by the Bulgarian sponsers.

Annex 4:
Methods for Review of Data on Injuries

An extensive search of the PubMed database and Google Scholar was done to retrieve literature on morbidity, mortality, and cost of various types of injuries, which were published either in English or with an English abstract (foreign-language publication). Combination of the following types of keywords were used: burden of injuries, injuries in Europe, road traffic injuries, violence, unintentional injuries, intentional injuries, morbidity and injuries, mortality and injuries, DALY due to injuries, injuries in low and middle income countries, and economic impact of injuries. A separate search was also conducted to identify injury prevention programs, which have been implemented so far in Eastern European countries. Combinations of the following types of keywords were used: injury prevention programs, programs on road safety, seat belt usage, speed limit programs, black spot treatment, violence prevention programs, alcohol related programs, and programs on emergency care. All keywords were first used to search for papers in all of Europe, and then specifically in Eastern Europe. The names of selected Eastern European countries were added to each of these terms to get information on respective countries. Further PubMed and Google Scholar searches were conducted using the author's name and the related articles link for key publications. During review of literature, additional papers were also identified from the respective reference lists.

Non-indexed literature and reports from international organizations were also accessed using Google, and organizational websites. Most publications used data from three main sources: the WHO Global Burden of Disease study (2002 version 1) database, the WHO Health for All database for Europe 2005 and the WHO regional report for Europe. Relevant data was also found in the World Report on Violence and Health, the World Report on Road Traffic Injury Prevention, and a report on Injuries and Violence in Europe.

To get more information on the types of injury prevention programs being implemented in Eastern European countries, contact was made with a range of program officers in aid agencies and donor organizations for data and unpublished information. Websites of selected government departments (such as the Ministry of Transport) were accessed for

each Eastern European country. Data on programs was collected and reviewed to identify evidence of effectiveness and impact on injury prevention; programs with insufficient information were not included. Due to lack of evaluation data, variability in quality of information, and the broad range of values reported in published literature and reports, this paper did not attempt to provide any quantitative summary of effects of programs. Instead a systematic review of the information has been presented with analysis of overall trends and knowledge gaps.

Annex 5:
Description of Injury Prevention Programs

Traditionally, injuries have been regarded as unavoidable "accidents". Within the last few decades, however, with better understanding of the nature of injuries, these are viewed as largely preventable events[i]. The scale and extent of this problem has not been fully appreciated either within the transition countries of Eastern Europe and Central Asia themselves, or more broadly in the European or global community[ii].

Research in the past few decades across Europe and beyond, however, shows that adopting a broader public health approach can significantly reduce the toll of injuries and violence on health. Such an approach involves understanding the burden and risks, finding out what works, and then implementing successful interventions on a broader scale[iii]. The growing acceptance of injuries as a preventable public health problem has led to the initiation of various programs and development of preventive strategies in the field of road safety and violence. Information on many such programs already being implemented in the E&E region has been collected and is summarized below. Details for various programs are presented in **Annex 3.** This paper does not review the issue of women trafficking, which is beyond the scope of this paper. The method for reviewing the data sources and literature for injuries is provided in **Annex 4**.

Road Safety

Road traffic injuries are a major contributor to death in Central and Eastern European countries. A number of programs have been undertaken in countries such as Poland, the Russian Federation, Hungary, and Romania to promote road safety. Numerous programs have been conducted to convince drivers and passengers of the importance of safety belt usage. Awareness campaigns were launched to address why seatbelts should be worn, and to counter seatbelt misconceptions held by members of the public. Programs were also conducted to increase awareness among the public about safe transport of children in vehicles, and promote the use of child restraints in vehicles. Examples of such programs include *Seat Belt Campaign*[iv] in Hungary, *Seat Belt Use*[v] in Russian Federation and *Buckle up your kid!*[vi] in Poland. Such programs evoked great interest in the public and media, and information was disseminated using TV spots and print media amongst others.

In one such case in Poland, support provided by the National Road Safety Council and organizations such as PIMOT (Industrial Automotive Institute) resulted in reliable expert opinion on the safe transport of children under age 12 years in cars and enabled campaign organizers to prepare high-quality information and training materials. These educational campaigns were followed with enforcement campaigns to highlight the fact that the use of seat belts is law and is mandatory. As a result, front seat belt usage rose from 37% before the introduction of the law to 95%, and within a short period there was 35% reduction in hospital admissions for road traffic injuries[vii]. In the Russian Federation as well, an increase in rate was seen in wearing seatbelts in urban areas (Yuzhno-Sakhalinsk) from 3.8% to 19.9%, and on rural roads from 26.8% to 55.8%. It is predicted that this will help in reduction of road traffic injuries though no results are yet available for injury rates.

Programs have been conducted to prevent crashes and loss of life at "black spots"; and in countries such as Poland, this has been identified as one of the main areas for action. The aim of these projects has been to identify locations with high crashes for intervention and improve their visibility in poor weather conditions, during day and night. In addition, they involve setting

up conspicuous traffic signs in order to direct the attention of drivers to the particular danger they are approaching. *Black Spot Treatment in Poland*[viii], *Black Spot Signing in Poland*[ix] and *Black Spot Improvements in Romania*[x] are examples of such programs (see annex 3). Evaluation results indicate that in Poland, the number of crashes at the spots where unconventional signs were posted decreased by 35%, which was accompanied by a 23% reduction in the number killed, and by 28% fewer injuries. The research conducted in Poland also concluded that improved distinctiveness, better visibility, and enhanced perception of this kind of signage are an important factor behind faster reaction of drivers. 3M® and its partners also developed a project in Romania to illustrate the possibilities for safety gains at three black spots using high performance reflective materials on traffic signs where conspicuity was considered a problem. These results and techniques have been communicated to a wider audience in several presentations, press conferences, and training courses[ix].

Numerous education-based programs have been conducted in the region to build awareness among the public and in particular among children, their parents and youth. These include content on road safety, traffic signs, and risks resulting from not following proper safety measures such as not wearing helmets during cycling and also highlighting the issue of respectful driving and mitigating aggressive driving. Educational kits have been handed out to children in schools and annual contests held. Such programs include *Safety For All*[xi], *Cool head in helmet (2005)*[xii], and *Don't Get Mad Campaign*[xiii] in Poland; and *Junior Bike (2004)*[xiv], and *Improvement of Road Signalization*[xv] in Romania. Some of these programs have been deemed successful and as a result the Ministry of Education in Poland has integrated such a program into the school system; now 8% of Polish schools use materials developed for the *Safety for All* initiative. Programs such as *Don't Get Mad* Campaign seemed to have little real effect on driver behavior, but the evaluation indicated that more people were inclined to self-criticism and were ready to recognize their own misconduct behind the wheel. As a result, it was determined that campaigns aiming to change behavior must be targeted on a specific type of conduct and supported by increased enforcement[xiii].

Occupational Road Safety

Programs have also been conducted to train professional drivers such as company drivers and ambulance drivers, and provide information on vehicles and road safety. The aim of such programs is to identify common safety problems and draft solutions for them. Examples of such programs include *Safety of HGV*[xvi] and *Safe Fleet Guidelines*[xvii] in Poland; and *Training for Ambulance Drivers*[xvii] in Hungary.

The *Multi-Country Transport Program* (MCTP)[xix], is one of the European Union's initiatives to develop a safer and more efficient transport system in Central European countries. This program recommends special training for the police; use of enforcement instruments; and the implementation of a new approach to road safety activities. This program has trained more than 100 ambulance-drivers from 50 settlements in 10 countries through courses, and the project will continue in 2006. As a result of these programs, "good practice" guidelines on occupational road safety were produced in 2005 and launched with an implementation and communications strategy in January 2006[xvii].

Pre hospital care

Programs have been initiated in the E&E region to improve pre hospital care facilities and to do situational assessments to gain a deeper understanding of the organization, resources, skills,

and operations of the emergency medical system. The aim of such programs was to identify areas that could be improved and also to generate action on the part of key stakeholders to increase the effectiveness of the pre-hospital care and response systems. Examples of such programs include *Situational Assessment of Rescue Services*[xx] and *Emergency Preparedness and Response*[xxi] in Poland. Findings indicated that though the sectors involved in rescue services were well equipped and displayed high experience in conducting life-saving procedures, there was a need to deal with the problem of inefficient coordination among the individual subdivisions of the rescue system on the scene of crash. As a result of these findings, subsequent phases of the projects were planned to implement interventions to improve coordination between participating subdivisions. Further evaluation of these programs is not available (see annex 3).

A few programs have also been conducted to improve the emergency response system, by promoting donation of modern ambulances, their effective dispatch, and use. One such program is *AIHA Uzbekistan / Georgia Partnership*[xxii] in Tashkent, Uzbekistan. As a result of this program, there was a significant drop in pre-hospital mortality. Such supply-based programs helped in establishing a monitoring and analysis mechanism for trauma cases and initiated work with local and national governmental agencies to identify ways to reduce trauma from crashes occurring on the road or at home.

Alcohol and Substance abuse

Many multi disciplinary programs focusing on prevention, intervention, treatment and aftercare to deal with problems of alcohol and substance abuse have been undertaken in countries like Poland, Russia, Croatia and Belarus. Some educational community based initiatives have been introduced in schools, mass media, and those targeted at young drivers to limit alcohol related problems and to raise awareness about the importance of safe driving. Training courses and a series of recommendations have also been formulated as part of such programs for health care providers to treat and prevent alcoholism. These were reported to have changed community attitudes about treating alcoholism as a disease that affects not only the alcoholic, but also his/her family.

Examples of such programs include *No to Alcoholism & Drug Addiction (1994)*[xxiii] in Moscow and *LaCrosse Wisconsin Partnership (1992-1999)*[xxiv] in Russia. *Project Northland* (2004)[xxv] initiated in Croatia was implemented at large scale and involved around 1,300 students. Results showed that these programs have been successful and one of them also had an important policy outcome according to which alcohol sales were restricted after 9:00 p.m. in liquor stores. Besides these, other education-based programs focusing on substance abuse have also been initiated which resulted in significant increase in health knowledge and greater utilization of health care facilities. *Health Partnerships*[xxvi] (2003 - 04) program in Armenia is one such program.

Domestic Violence

A number of programs have been initiated to prevent violence against women and children in countries such as Armenia, Bulgaria, Russia, and Croatia. These programs have been mainly responding to the victims of violence. Projects have been set up to raise awareness relating to childcare, children's rights, women's rights, child abuse and violence in the family through educational radio shows, TV shows and conferences, which help to influence the attitudes of the community. One such project is *Child protection*[xxvii] running in Croatia since 1997; as part of this

program, experts discuss various topics related to the upbringing of children and youngsters in radio shows. No information is available on the outcome of this project but it aims at establishing a Safe House for victims of violence in the family.

Care centers have also been established for women victims of violence, which provide a variety of services including shelter. The *Nadja Centre* and *Open Door Centre* are examples of two such centers in Bulgaria, which were established under the programs *Violence Against Women - Prevention & Care* and *Support Services for Victims of Domestic Violence*[xxviii, xxix,] in 1995 and 2000 respectively. Such programs have shown that there has been a significant increase in the number of women who use these centers. For example, at Nadja Centre in Bulgaria, there were 960 help-line consultations in 1997, as compared with 26 in 1996. For the last 2 years more than 400 women have been successfully treated in the *Open Door Centre* in Pleven, Bulgaria; 87% of them were victims of psychological violence, 47 % of physical violence and 10 % of sexual abuse[xxix].

These centers have not only succeeded in providing shelter to victims of violence but also established a vision of the way help can be effectively provided to women. They have the potential to bring about change in social attitudes, policies, and practices in respect to the issues of violence against women. As additional outputs of such programs, many have been in progressing towards the prevention of domestic violence in schools.

As seen from the review above, bilateral (such as USAID) and international organizations have invested some resources in programs designed to prevent and treat injuries and violence over the past 15 years in Eastern Europe. These programs have focused on injury prevention and behavioral change for example to reduce alcohol abuse. Clinical outcomes have improved, and treatment costs have been reduced in most of such pilot programs. Perhaps more important is that these programs have served as a basis for expanded and sustained programs; in some instances, these programs have been incorporated into a country's health care system once the initial funding ended. Other NGOs are also beginning to explore investments in the prevention and control of injuries in Eastern Europe.

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