

## chapter five

# Patterns of health

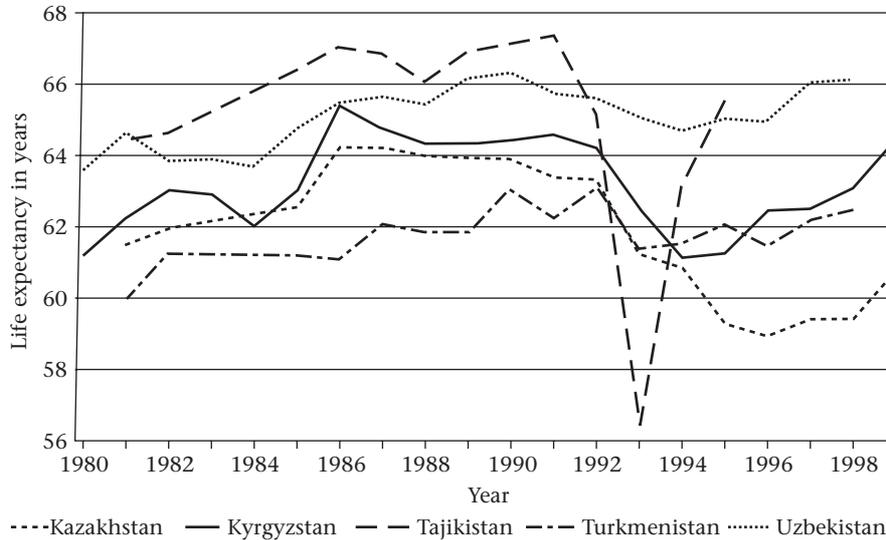
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### Introduction

Central Asia has an unusual pattern of mortality and struggles with the double burden of infectious and non-communicable disease. Yet, in contrast to the Russian Federation and the Baltic republics, there is remarkably little published research on patterns of health and its determinants in the region. Although aggregate data on mortality from major disease categories are published by the World Health Organization (WHO), access to more detailed information (such as regional or socioeconomic differences, or to evidence about the validity of the data) has been difficult to obtain. In part, this reflects the very limited capacity for data analysis and interpretation within health ministries and universities in the region. There is also a persisting culture of secrecy in some places, with concerns about exposing perceived national failings to international scrutiny. For example, in at least one country there have been discussions by senior policy-makers about the possibility of refusing to provide data on notifications of syphilis to WHO, because of fears about the impact on the embryonic tourist industry.

### Changes in life expectancy at birth

Although it has many limitations, life expectancy at birth, as a measure of overall health in a population, has the benefit of simplicity. Before 1991, life expectancy at birth was broadly similar to that in Russia, with the exception of female life expectancy in Turkmenistan, which was consistently about 4 years lower than in other republics. In particular, most of the republics exhibited similar changes to those seen in the Soviet Union in the mid-1980s, at the time of Gorbachev's anti-alcohol campaign. Kazakhstan and Kyrgyzstan behaved most like Russia, with only small changes in Tajikistan and Turkmenistan, and Uzbekistan occupied an intermediate position. Although these trends have

**Figure 5.1** Life expectancy at birth, in years, for central Asian men

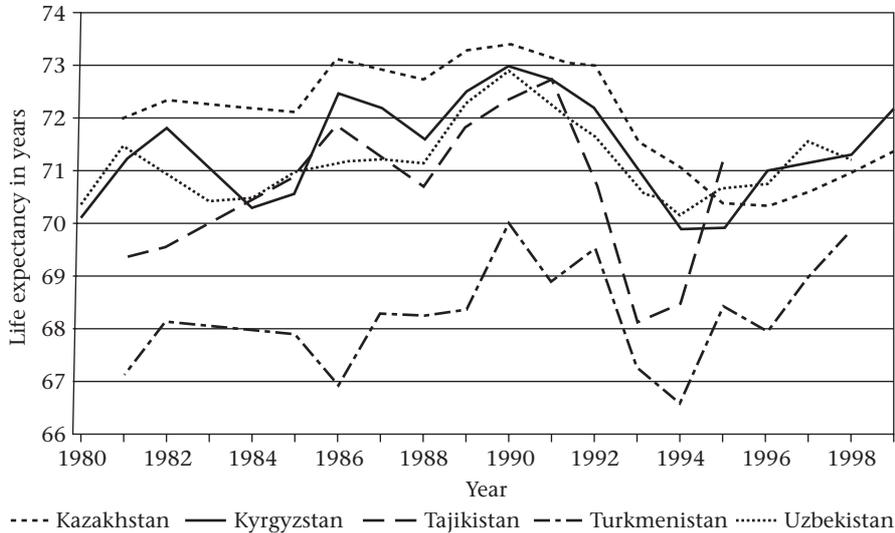
Source: WHO (2000)

not been subjected to detailed analysis, the close similarity to those seen in Russia, which are well understood, strongly suggests that alcohol has been a major cause of premature mortality, at least in Kazakhstan and Kyrgyzstan.

After 1990–92, life expectancy at birth fell in all countries. Tajikistan, however, requires separate consideration. The dramatic decline in life expectancy in the early 1990s coincided with the civil war. In addition to the estimated 60,000 deaths from communal violence (Rahminov *et al.* 2000), the war also led to mass movements of population and major weaknesses in death registration, so that meaningful analysis of the available data is impossible.

The decline in life expectancy among men was greatest in Kazakhstan and Kyrgyzstan, both of which followed trajectories that were very similar to that seen in the Soviet Union, with rather more gradual declines in Turkmenistan and Uzbekistan (Figure 5.1). The decline in female life expectancy was much more consistent (Figure 5.2), with Uzbekistan experiencing a steep fall similar to that seen in its northern neighbours. As with the changes seen in the 1980s, the similarity to the changes observed in the Soviet Union suggests the importance of alcohol as a proximate risk factor in the observed trends (Walberg *et al.* 1998). This is supported by the observation that countries such as Kazakhstan, which experienced a substantial increase in life expectancy during the 1985 anti-alcohol campaign, also saw a large decline in the early 1990s, whereas those where the 1985 improvement was less, such as Uzbekistan, experienced a small subsequent decline. The already low female life expectancy in Turkmenistan fell even further in 1994 to 66.5 years, before improving.

Differences in life expectancy by gender between countries in the former Soviet Union offer some important insights into determinants of disease. Compared with life expectancy in Russia, life expectancy of males in central

**Figure 5.2** Life expectancy at birth, in years, for central Asian women

Source: WHO (2000)

Asia has tended to be better, while that of females has been worse. Anderson and Silver (1997) argued that this is because female life expectancy reflected the general level of economic development of the republics, whereas male life expectancy reflected the presence of particular risk factors, most notably alcohol consumption. Thus, Tajikistan and Turkmenistan, both less developed than the other central Asian republics and with relatively low rates of alcohol consumption, reflected the persistence of a traditional Islamic culture.

One of the major limitations of life expectancy at birth as a summary measure is the extent to which it is driven by infant mortality rates, especially where these rates are relatively high, as is the case in this region. In particular, changes in the way in which infant mortality is recorded can have a disproportionate impact on life expectancy at birth.

During the Soviet era, infant mortality in central Asia was always much higher than in Russia, with the highest rates found in Tajikistan and Turkmenistan. Rates have, however, fallen in all countries since independence, with particularly spectacular declines in Kyrgyzstan and Uzbekistan.

### Validity of data

Before proceeding to examine specific causes of premature death, it is necessary to review what is known about the quality of data in this region. Reconstruction of life tables based on published data from countries in the region has identified several concerns (Anderson and Silver 1997). Possible explanations for the deviations from expected patterns include erroneous reporting of age, with heaping (which creates peaks) at 5 year intervals, and simple non-recording.

As already noted, there must be concern about the data for Tajikistan, but this is also the case for data for adjacent parts of neighbouring countries, given the large, but poorly quantified movements of population that resulted from its civil war and from events in neighbouring Afghanistan.

Turning to specific causes, during the Soviet era, Goskomstat (the State Statistical Committee) undertook regular investigations of the quality of data collection, including certification of cause of death. Published results of such studies are, however, largely limited to urban centres or to some of the European parts of the Soviet Union. There is, consequently, little direct evidence about the quality of data at that time, although it is probable that some of the problems reported elsewhere, such as a tendency to overestimate deaths from cardiovascular disease, would also apply. Since independence, such limited evaluations as may have been conducted appear to have received an even lower priority. In other former Soviet countries, there has been a marked increase in the use of non-specific diagnostic codes – in particular, at the expense of deaths from suicide or homicide – and it is likely that this is also true in the central Asian countries. In the Russian Federation and Ukraine, there has been a decline in recorded deaths from cancer among the elderly in rural areas; this is most probably a consequence of weaknesses in data collection (Shkolnikov *et al.* 1999).

The one area where there is a reasonable understanding of the weaknesses of the data is infant mortality. The Soviet Union used its own definition of a live birth. This had the effect of reducing the infant mortality rate below that which would have been reported had the WHO definition been applied. The magnitude of the difference has been estimated by several researchers, both during the Soviet era and, by observing the changes that occurred when the Baltic states changed to the WHO definition, after independence. These researchers estimated that the Soviet definition would underestimate the true figure by about 20 per cent (Anderson and Silver 1990).

There is more direct evidence from several countries in this region, from a series of demographic and health surveys, in which large household surveys (approximately 4000 women) asked, among other things, about births and child survival. The results of these surveys indicate that the official data from Kazakhstan, Kyrgyzstan and Uzbekistan, where surveys have been conducted, underestimate the true values by between 30 and 50 per cent. Consequently, it is probable that the use of the Soviet definition of a live birth is not sufficient to explain the difference, and there is likely to be considerable, underregistration of births and infant deaths in some areas. This situation is likely to deteriorate further in the countries that have introduced charges for registration.

### **Specific causes of death**

For the reasons outlined above, it is necessary to interpret data on causes of death with some caution. By confining analysis to those under the age of 65, where it is plausible that certification of cause of death would be less of a problem than among those dying at older ages, it is possible to draw some tentative conclusions.

Cardiovascular disease is the largest contributor to the gap in mortality between this region and industrialized countries, with rates about five times higher than in western Europe. Since the early 1990s, rates have increased steeply among men in each country, but this has been especially dramatic in Kazakhstan, where it has risen by almost 50 per cent. Among women, increases are again apparent, but are less marked. The speed of these changes, which are also apparent in the Russian Federation, have caused some to challenge the validity of the data, because of the inconsistency with the time scale over which changes in classical risk factors exert their effects. Although there are certainly reasons for concern in this region, it is now apparent that such rapid changes can be explained by the major role that alcohol consumption (in particular, binge drinking) plays in the aetiology of ischaemic heart disease in former Soviet states (McKee and Britton 1998). While changes in alcohol consumption can explain the rapid fluctuations observed, other factors are likely to contribute to the underlying gap between this region and the West. These include traditional factors, such as smoking, a diet high in fat and, probably, poor detection and treatment of hypertension, as well as (at least in some areas) diets that are extremely low in antioxidants. As in other former Soviet republics, there has been some improvement in cardiovascular mortality since the mid-1990s.

Some of the same factors, such as inadequate detection and treatment of hypertension and a diet low in antioxidants, can probably explain the vast difference in cerebrovascular disease mortality between central Asia and western Europe.

Cancer is also a major contributor to the East–West gap in mortality. In central Asia, Kazakhstan, with much higher death rates than in western countries, stands out. This is due to both smoking-related cancers and other cancers, with death rates from lung cancer among men being twice that seen in western Europe. Although, at present, this cause of death is falling slightly, research in the Russian Federation (where the same phenomenon has been observed) has shown that this reflects changes in smoking rates in the post-war period, so that rates can be expected to rise again in about 2003. To date, smoking-related cancers are still relatively low in other central Asian countries, particularly among women, but this is likely to change considerably in view of the extremely intensive marketing efforts by transnational tobacco companies. Their symbols are almost ubiquitous in many cities, and they are actively targeting young people by, for example, sponsoring discos, admission to which is conditional on presenting a used cigarette pack.

In contrast to the apparent lack of concern about the risks posed by smoking, there has been considerable political discussion of the potential risks of cancer arising from Soviet era nuclear testing at Semipalatinsk, in Kazakhstan. A study of childhood cancers found about 70 per cent more cases of childhood leukaemia among those living within 200 km of test sites, compared with those living over 400 km away. There may also be a small increase in brain tumours in those close to the sites (Zaridze *et al.* 1994). The contribution of such cancers to the overall burden of mortality in the region is, however, small.

The third leading contributor to the East–West mortality gap is injuries and violence. As with cardiovascular disease, alcohol consumption is often

an important proximate cause. Several countries experienced very dramatic increases in road-traffic accidents in the period after independence, but these have now fallen to levels much closer to those seen in western Europe – albeit with a much lower density of traffic. In some places, police enforcement of laws on speeding has been strengthened markedly, although road conditions remain extremely poor.

Deaths from other causes of injury and violence are, however, much more frequent than in the West. There have been spectacular increases in deaths in Kazakhstan and Kyrgyzstan since independence, while rates in Turkmenistan and Uzbekistan (although high) have remained relatively stable. Kyrgyzstan has, however, experienced a small reduction in deaths from injuries since 1994. The causes of the high number of injuries are inadequately understood, but some features are known. Drowning, especially in summer and among young children, is much higher than in the West, as are scalds from domestic cooking accidents. The extensive design features that have been adopted in the West to enhance safety are largely absent. These include such diverse factors as making steps on stairs the same height, covering exposed electrical wiring and even placing barriers around (or covering) holes in the road. In many cities, there is a high level of violence, often associated with alcohol. Ambulance services are often inadequate and levels of first-aid training poor.

Maternal mortality, which remains at about six to eight times the level in the EU, must also be mentioned. A detailed study of these deaths in Kazakhstan, where there has been no improvement in maternal death rates since the 1980s, showed that most were attributable to illegal abortions (Kaupova *et al.* 1998).

While the pattern of mortality among adults is often similar to that in the European part of the former Soviet Union, there is persisting high childhood mortality from diseases such as diarrhoea and respiratory infections.

### ***Measures of morbidity***

While there are concerns about data on mortality, these are even greater for data on morbidity. Very limited information is available, and it is essentially limited to infectious disease. Thus, certain issues will receive prominence simply because they are measured, while others, which may be as important, are not. Nonetheless, some issues do emerge. The incidence of tuberculosis has risen sharply everywhere, returning to rates last seen in the early 1980s (Dzhunusbekov *et al.* 1997). There has been little direct research on the underlying causes in central Asia but, as the same phenomenon has also been seen in the Russian Federation, it is probable that similar factors apply (Viljanen *et al.* 1998). In the Russian Federation, a key factor is the growth of the prison population, with large numbers of predominantly young men being held under grossly inadequate conditions. Failings in the system of care provided (Keshavjee and Becerra 2000), the existence of corruption and weak systems of follow-up treatment have led to a marked increase in multidrug-resistant tuberculosis that is proving extremely difficult to control.

Another infectious disease that is causing increasing concern is syphilis, the rates of which have exploded (Illiev *et al.* 1999). Although not yet apparent

in published data, these trends are clearly a harbinger of a major epidemic of acquired immunodeficiency syndrome (AIDS). Future increases in human immunodeficiency virus (HIV) infection are also likely because of the dramatic increase in intravenous drug use. Afghanistan is the source of up to 80 per cent of the heroin supplied to Europe, and much of it is transported through Kyrgyzstan and Tajikistan. The number of addicts in Kyrgyzstan is estimated to have increased four-fold in the 1990s. A survey undertaken by the United Nations and the Open Society Institute, which funds a large harm-reduction programme in the region, estimated that up to 18 per cent of addicts in Bishkek and 49 per cent in Osh were infected with HIV (Frantz 2000). The co-existence of AIDS and drug-resistant tuberculosis is obviously a matter of grave concern.

As in the Russian Federation, a breakdown in immunization programmes in the early 1990s contributed to outbreaks of diphtheria, although these have again been brought under control (Glinyenko *et al.* 2000; Kembabanova *et al.* 2000; Niyazmatov *et al.* 2000). The failure of immunization programmes also contributed to some outbreaks of poliomyelitis (Sutter *et al.* 1997).

There is also some evidence from Uzbekistan that, despite chlorination at water-supply plants, leakage from sewers is contributing to the continuing high rates of diarrhoea in some areas (Semenza *et al.* 1998).

The only other cause of morbidity for which there are reasonable data is the very high level of anaemia among many women in the region, and of anaemia and failure to thrive among children (Giebel *et al.* 1998). These problems are attributed largely to nutritional iron deficiencies and to the absence of factors promoting iron absorption, such as vitamin C. This level of anaemia, in large part, appears to reflect the distribution of food within traditional families, exacerbated by factors such as heavier menstrual loss due to the widespread use of the intra-uterine device as a form of contraception. Anaemia tends to be somewhat more common among Kazakh and Uzbek women than among Russians in either Kazakhstan or Uzbekistan (National Institute of Nutrition 1996; Institute of Obstetrics and Gynaecology 1997; Research Institute of Obstetrics and Paediatrics 1998).

Much of the region is also susceptible to endemic goitre, due to iodine deficiency. Although this was largely controlled during the Soviet era by means of iodine-enriched salt, there has been a rapid growth in imports of non-enriched salt that is sold at a much lower price than the enriched salt.

There have been a few other studies of particular diseases. For example, a study in the Fergana Valley in Uzbekistan found a low prevalence of hypertension, compared to other countries, but relatively high rates of obesity and diabetes, which was present in 9 per cent and 5 per cent, respectively, of semi-rural men and women and 13 per cent and 9 per cent, respectively, of urban men and women (King *et al.* 1998).

### **Sub-national patterns of disease**

The data discussed so far have been at the country level. Unlike other former Soviet states, it has been extremely difficult to obtain access to data at the sub-national level, so that regional variations have received little attention. It

is likely, however, that large variations, especially between urban and rural areas, do exist. This can be seen clearly in a comparison of mortality from various causes in the *oblasts* of Turkmenistan, based on mortality data from 1995. Death rates among men from nearly all causes were lower in Ashgabat, the capital, than in more rural *oblasts*. Among women, however, the difference is very marked, with overall death rates about 50 per cent higher in rural areas. This equates to a difference in life expectancy at birth of about 10 years. Much of this difference is due to the lower survival of female infants in rural areas, raising concerns about cultural attitudes on the value of male and female lives (Tohidi 1994).

Similar differences are also apparent in the results from the demographic and health surveys. For example, in Kyrgyzstan in 1997, infant mortality was 70 per 1000 in rural areas but 54 per 1000 in urban areas. The corresponding figures for mortality under 5 years of age were 82 and 58, respectively (Research Institute of Obstetrics and Paediatrics 1998).

There is even less information available on other parameters, such as education or ethnicity, which may be associated with differences in mortality, although, again, the demographic and health surveys do provide some information with regard to children. In general, in Kyrgyzstan, survival to 5 years of age is somewhat better among children of Russian descent than among children of other nationalities (mortality of 37 per 1000 compared to 79 per 1000 in Kyrgyz families and 77 per 1000 in Uzbek families). Also, there is less mortality among people whose parents had completed higher education (56 per 1000 compared with 93 per 1000 in people with only a primary or secondary education in Kyrgyzstan) (Institute of Obstetrics and Gynaecology 1997).

### Summary and implications

In terms of their patterns of health, the former Soviet republics of central Asia exhibit some similarities, but also considerable differences. Tajikistan has been ravaged by a civil war. The health of women in Turkmenistan, especially in rural areas, stands out as being much worse than in any other part of the former Soviet Union. Kazakhstan and Kyrgyzstan are in many ways rather similar, although Kazakhstan stands out in terms of its high mortality from cancer.

The region exhibits some of the worst features of both developed and developing countries, with high rates of heart disease and, in some cases, cancer, but also high rates of childhood infections. These findings stress the importance of developing effective mechanisms for health promotion and for integrated primary care, especially in rural areas. Perhaps the main implication of this brief review is the need for a much greater emphasis on the collection and analysis of routine data and a better understanding of the determinants of disease and premature death in the central Asian republics.

### References

- Anderson, B.A. and Silver, B.D. (1990) Trends in mortality of the Soviet population, *Soviet Economy*, 3: 191–251.

- Anderson, B.A. and Silver, B.D. (1997) Issues of data quality in assessing mortality trends and levels in the new independent states, in J.L. Bobadilla, C.A. Costello and F. Mitchell (eds) *Premature Death in the New Independent States*. Washington, DC: National Academy Press.
- Dzhunusbekov, A.D., Khazhibayeva, Z.I. and Dametov, U.S. (1997) Epidemiologicheskaya situatsiya po tuberkulezu v Respublike Kazakhstan [Epidemiologic situation of tuberculosis in the Republic of Kazakhstan], *Problemy Tuberkuleza*, 1: 25–7.
- Frantz, D. (2000) Heroin and needles: battling AIDS in central Asia, *New York Times*, 16 October, p. 8.
- Giebel, H.N., Suleymanova, D. and Evans, G.W. (1998) Anaemia in young children of the Muynak District of Karakalpakstan, Uzbekistan: prevalence, type, and correlates, *American Journal of Public Health*, 88(5): 805–7.
- Glinenko, V.M., Abdikarimov, S.T., Firsova, S.N. et al. (2000) Epidemic diphtheria in the Kyrgyz Republic, 1994–1998, *Journal of Infectious Diseases*, 18 (suppl. 1): S98–S103.
- Illiev, S.K.H., Gaipova, M.B. and Karmanova, G.A. (1999) Epidemiologicheskie osobennosti VICH-infektsii v Turkmenistane [The epidemiological characteristics of HIV infection in Turkmenistan], *Zhurnal Mikrobiologii Epidemiologii Immunobiologii*, 1: 19–21.
- Institute of Obstetrics and Gynaecology, Ministry of Health of the Republic of Uzbekistan (1997) *Demographic and Health Survey 1996*. Calverton, MA: Macro International Inc.
- Kaupova, N., Nukusheva, S., Biktasheva, H., Goyaux, N. and Thonneau, P. (1998) Trends and causes of maternal mortality in Kazakhstan, *International Journal of Gynaecology and Obstetrics*, 63: 175–81.
- Kembabanova, G., Askarova, J., Ivanova, R. et al. (2000) Epidemic investigation of diphtheria, Republic of Kazakhstan, 1990–1996, *Journal of Infectious Diseases*, 181 (suppl. 1): S94–S97.
- Keshavjee, S. and Becerra, M.C. (2000) Disintegrating health services and resurgent tuberculosis in post-Soviet Tajikistan: an example of structural violence, *Journal of the American Medical Association*, 283: 1201.
- King, H., Abdullaev, B., Djumaeva, S. et al. (1998) Glucose intolerance and associated factors in the Fergana Valley, Uzbekistan, *Diabetic Medicine*, 15: 1052–62.
- McKee, M. and Britton, A. (1998) The positive relationship between alcohol and heart disease in eastern Europe: potential physiological mechanisms, *Journal of the Royal Society of Medicine*, 91: 402–7.
- National Institute of Nutrition, Academy of Preventative Medicine of Kazakhstan (1996) *Demographic and Health Survey 1995*. Calverton, MA: Macro International Inc.
- Niyazmatov, B.I., Shefer, A., Grabowsky, M. and Vitek, C.R. (2000) Diphtheria epidemic in the Republic of Uzbekistan, 1993–1996, *Journal of Infectious Diseases*, 181 (suppl. 1): S104–S109.
- Rahminov, R., Gedik, G. and Healy, J. (2000) *Health Care Systems in Transition: Tajikistan*. Copenhagen: European Observatory on Health Care Systems.
- Research Institute of Obstetrics and Paediatrics, Ministry of Health of the Kyrgyz Republic (1998) *Demographic and Health Survey*. Calverton, MA: Macro International Inc.
- Semenza, J.C., Roberts, L., Henderson, A., Bgan, J. and Rubin, C.H. (1998) Water distribution system and diarrheal disease transmission: a case study in Uzbekistan, *American Journal of Tropical Medicine and Hygiene*, 59: 941–6.
- Shkolnikov, V.M., McKee, M., Vallin, J. et al. (1999) Cancer mortality in Russia and Ukraine: validity, competing risks and cohort effects, *International Journal of Epidemiology*, 28: 19–29.
- Sutter, R.W., Chudaiberdiev, Y.K., Vaphakulov, S.H. et al. (1997) A large outbreak of poliomyelitis following temporary cessation of vaccination in Samarkand, Uzbekistan, 1993–1994, *Journal of Infectious Diseases*, 175 (suppl. 1): S82–S85.

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- Tohidi, N. (1994) *Gender, Identity and Restructuring in the Muslim Countries of the Former Soviet Union*. Los Angeles, CA: International Sociological Association.
- Viljanen, M.K., Vyshnevskiy, B.I., Otten, T.F. *et al.* (1998) Survey of drug resistant tuberculosis in northwestern Russia from 1984 through 1994, *European Journal of Clinical Microbiological Infectious Diseases*, 17: 177–83.
- Walberg, P., McKee, M., Shkolnikov, V., Chenet, L. and Leon, D.A. (1998) Economic change, crime, and mortality crisis in Russia: a regional analysis, *British Medical Journal*, 317: 312–18.
- WHO (2000) *WHO European Health for All Database*. Copenhagen: WHO Regional Office for Europe.
- Zaridze, D.G., Li, N., Men, T. and Duffy, S.W. (1994) Childhood cancer incidence in relation to distance from the former nuclear testing site in Semipalatinsk, Kazakhstan, *International Journal of Cancer*, 59: 471–5.