

## Chapter VII: The Anti-plague System of Moldova and Its Successor Establishment

### 1. History of the Moldovan Anti-plague System and Its Successor

The Republic of Moldova (hereafter Moldova) is a land-locked country in South-eastern Europe, bordering Ukraine in the east and Romania in the west. It covers 33,843 sq. km, 80 percent of which is arable land, crops, and pasture. Moldova has 4.3 million inhabitants, 752,000 living in Chisinau, the capital city. The country is the most densely populated of the NIS, with a population density of 124 people per sq. km. Approximately 54 percent of the population lives in rural areas with agricultural and food processing activities dominating the economy. Between 1993 and 1999, Moldova's GDP decreased by about 60 percent. In 2000, per capita GDP was \$353.50. Wages are often paid substantially in arrears. More than 90 percent of the population in 2001 lived on less than an equivalent of \$1.00 per day. Moldova has had uninterrupted negative net migration since 1982, with the population shrinking at a rate of -0.32 percent per year, mostly due to emigration. The country's administrative units consist of 32 *raions* (*raioane*), 3 municipalities (*municipiul*), 1 autonomous territorial unit (*unitatea teritoriala autonoma*), and 1 territorial unit (*unitatea teritoriala*).

There are four epizootic regions in Moldova. In the north, there is the Faleshti-Glodeni region; in the center, the Codru region; in the south, the Vulcaneshti and Cahul region; and in the east (the Transnistrian region), the Curciurgan region. However, as with Ukraine, Moldova has no natural plague focus.

The Moldova AP Station was established in Chisinau in 1972.<sup>148</sup> The direct reason for the establishment of the station was in response to two severe outbreaks of cholera that occurred in 1970 and 1971 in Moldova. In addition to cholera, the station was given responsibility for studying tularemia and anthrax, both which exist in natural foci in Moldova. It reported to the Scientific Research AP Institute at Rostov-on-Don.

In the 1980s, the AP Station employed 81 persons, including 14 doctors and 28 lab technicians, with the remainder being auxiliary personnel. In addition, the Station had a field staff of 2 zoologists, 2 lab technicians, 1 doctor, and 2 assistants. At that time, the Station was well supported so it possessed all that was needed to perform adequate field studies—equipment, supplies, and enough people. The Station then possessed eight vehicles, including 4-wheel drive trucks, for use on field expeditions. The Station sent field expeditions to each of the four epizootic regions on an annual basis to monitor disease activity. Samples collected from rodents and the environment were frozen and sent for analysis to the Station in Chisinau. All cultures of anthrax, cholera, and tularemia bacteria recovered by the Station were sent to the Rostov AP Institute for confirmation. In addition, specialists from Rostov came to Chisinau twice a year for consultations. Moldovan AP Station workers also were dispatched every year to the Aralsk region in Kazakhstan because there was a need for more experts to perform field studies than were available at the Alma-Ata Central Asian AP Institute.

At the end of 1991, the AP Station stopped receiving funding from the Soviet MOH and, equally disastrous, it received no funding from the newly established republic. Therefore, the Station could no longer be sustained and it was closed down in early 1992. Its specialists were sent to work at the Moldovan SES's station in Chisinau and its culture collections of bacterial strains that cause cholera, tularemia, anthrax, and yersiniosis were

destroyed. Only a few cultures of *Yersinia pseudotuberculosis*, and *Y. enterocolitica* were saved for use in serological studies. What used to be the AP Station's laboratory became a SES HIV/AIDS laboratory.

In 1992, the republic's government established the National Scientific Practical Center of Epidemiology and Hygiene, where the AP specialists relocated. The center was renamed the National Scientific Practical Center of Preventive Medicine in 1994. It reported to the Chief Sanitary Doctor of the State who, in turn, reported to the vice-minister in charge of sanitary-epidemiological issues at the Moldovan MOH. The National Scientific Practical Center of Preventive Medicine had a General Epidemiological Center and the Virology Section. The General Epidemiology Center has a Section of Conventional and Extremely Dangerous Diseases that, in effect, took over the functions of the former AP station. In 2004, its main functions related to performing epidemiological surveillance of dangerous diseases caused by bacteria, the most important being those that cause anthrax, leptospirosis, tularemia, brucellosis, cholera, and other waterborne diseases. The Section had a laboratory where work was carried out on group II pathogens; if a suspected group I pathogen was recovered somewhere in Moldova, it was immediately destroyed or dispatched to the M.P. Chumakov Institute of Poliomyelitis and Viral Encephalitis in Moscow with which it retains good relations. The Section's laboratory housed a small culture collection that includes strains of *Bacillus anthracis*, *Francisella tularensis*, *Leptospira* species, *V. cholerae*, and *Y. enterocolitica*.

In 2004, 12 SES field stations reported to the General Epidemiological Center. Each field station has two general sections. The first section conducted epidemiological studies in its area of responsibility. The second section consisted of four laboratories for conducting studies in hygiene, food sanitation, water sanitation, and environment. Each field station covered a specific region of Moldova. In Soviet times each of the republic's 32 *raions* had a field station, but since 1991 there were insufficient financial or human resources to support such a widespread network.

The Section of Conventional and Extremely Dangerous Diseases had several research goals. For example, its scientists were performing studies on the epidemiological characteristics of epizootic diseases; studies on natural foci of yersiniosis; studies on pathogens that cause conventional diseases in children; and studies on the sensitivity to various antibiotics of pathogens causing gastro-intestinal diseases in Moldova. The results from these studies are used by the MOH to develop methodological instructions on how to prevent and treat these diseases in Moldova. The Section currently has 12 doctors, 24 lab technicians, and 4 auxiliary personnel.

Like the salaries of other professionals employed by the government, the salary levels for scientists are very low in Moldova. A center director earns about 1260 lei per month (\$90), a senior doctor at the General Epidemiology Center earns 300 – 400 lei per month (\$ 22-29); a junior doctor about 250 lei (\$18); and a lab technician about 180 lei (\$13).<sup>149</sup> However, the Center has so many vacant positions that the remaining staff receives an additional 50 percent added to their base salaries. Those staff members who are recognized as possessing superior capability, which is decided by a special committee, receive an additional 100 lei per month. It usually takes 15 years on the job before this honor is granted. In winter, the Center itself needs to pay for its heat and other utilities so it secures this funding by dunning its staff's salaries. To visualize how low

these salaries are, the minimum estimated living costs for family of four in Chisinau is about 1200 lei (\$85) and to live normally, more than 2000 lei (\$142).

The National Scientific Practical Center of Preventive Medicine's Virology Center was established in 1995. It used to be located in the Center's headquarters, but in 2000 moved to a separate building that has better security and whose research "boxes"<sup>150</sup> were better suited for viral work. The Center currently consists of four laboratories: the Laboratory of Viral Hepatitis; the Laboratory of Diagnostic Poliomyelitis and Enterovirus Infections; the Laboratory of Infectious Respiratory Viral Diseases (including SARS); and the Scientific-Practical Laboratory, which concentrates on herpetic diseases, especially Herpes zoster and Herpes simplex. For extremely dangerous viral infections, like rabies, specimens are sent to the Center for Extremely Dangerous Infections for study. In case the Virus Center needs to turn to a reference laboratory for assistance with an especially difficult diagnosis, its main contact is the M.P. Chumakov Institute of Poliomyelitis and Viral Encephalitis in Moscow.<sup>151</sup> The Center's scientists have had a close working relationship with the Institute since 1966.

The Virology Center employs 30 persons, including 12 doctors and 14 lab technicians. Its funding comes from the MOH through the economic section at the National Scientific Practical Center of Preventive Medicine. The Virology Center never receives enough money for equipment and supplies. Its staff is also poorly paid, receiving the same rates as those described above.

## **2. Public Health Activities in Moldova**

Several decades of progress in reducing the incidence of communicable diseases during the Soviet era were reversed for a number of illnesses in the years following independence. Increasing poverty, weakened prevention and control programs in the early period after independence, and increasing international travel of the population were the most likely causes for the worsening of public health. The health sector budget dropped dramatically both in terms of the percentage of GDP allocated to health and in actual health expenditure per capita. The severe lack of funding for the health sector combined with an emphasis on tertiary care and continued use of non-standard and more costly treatment protocols for some conditions (for example TB, child birth, and mental illness) has threatened the provision of the most basic health services, including vaccination, for the Moldovan population. The national vaccination service almost stopped altogether between the years 1990 and 1993 due to a lack of resources. Physical deterioration of facilities and equipment and a lack of basic drugs and contraceptive devices are a reality for many medical centers and research institutions.

In 1995, Moldova experienced a public health crisis. More than half of its population was not receiving health care, morbidity rates from infectious diseases had almost doubled, and sexually transmitted diseases were becoming epidemic, as was TB. Alcohol-related diseases were at an all time high level. The international community came to recognize Moldova's dire situation, so assistance started to arrive from the WHO, international and bi-national aid agencies, and nongovernmental organizations. Also, the Moldovan government took substantial steps to reform health care delivery and disease prevention programs. As a result, life expectancy has increased, maternal and infant mortality rates have declined, and the incidence of syphilis and TB has decreased. Nevertheless, a 2003 World Bank study found that "Moldova faces a dual, evolving

epidemiological profile with the presence of diseases typical of developing countries (infectious and parasitic diseases) as well as a high rate of diseases typical of developed countries (cancer, accidents and cardiovascular diseases).<sup>152</sup> However, despite the large, and growing, burden of the second category of non-communicable diseases (which account for approximately 87 percent of all deaths in Moldova), the focus of Moldovan public health remains much as it did in Soviet times, when the emphasis of the SES was on control of communicable disease and environmental health (which account for less than 2 percent of all deaths).<sup>153</sup>

Moldova, like a number of neighboring countries, suffered a major diphtheria outbreak between 1994 and 1996; more than 700 people were infected during that time. A large-scale cholera outbreak also occurred in 1995. Sexually transmitted infections have sharply increased since independence, with syphilis showing one of the largest increases. In a ten-year period, sexually transmitted infections have risen by a factor of nearly thirty. Moldova has relatively few HIV/AIDS cases, with the majority being drug users. However, other estimates suggest that the country has a much higher incidence. Moldova had very high rates of viral hepatitis in the past, but the incidence has been declining since 1999. Nonetheless, Moldova's current rate of hepatitis B is seven times the EU average, mostly due to unsafe injection practices.

TB has emerged as another major communicable disease problem in Moldova, particularly among the prison population. Although coverage with the BCG vaccine is high among the Moldovan population, the incidence of TB has been rising since 1990. For example, in 1998, 65.6 cases per 100,000 people were recorded. The TB rate in prisons is much higher; in some Moldovan prisons, up to 85 percent of inmates have TB.<sup>154</sup> Currently, HIV/AIDS, TB, and sexually transmitted diseases are Moldova's most urgent public health problems.<sup>155</sup>

The MOH has overall responsibility for health care, including setting guidelines and monitoring nationwide health services. National programs administered by the ministry include the national immunization and TB control program and the national-level "republican" hospitals and research institutions (including the National Scientific Practical Center of Preventive Medicine). The MOH has departments that cover health service personnel planning, pharmaceutical regulation, mother and child health, health reform issues, medical technology, family planning, and other areas. State level research and hospital institutes, such as the Republican Institute for Mother and Child Health, and the Cardiology and Oncology Institutes, which are found mainly in Chisinau, are funded directly by the MOH and cover both service and research. The new regional health administrations report to ministry headquarters. However, the so-called Transdniestrian MOH is effectively responsible for the funding and management of the health services in its region.

The National Scientific Practical Center of Preventive Medicine was established in 1999 as part of the restructuring of the SES. It had regional offices in each of the nine new *judets* (counties) that were established in 1998 (but were replaced in 2003 by 32 *raions*). It establishes standards and guidelines for environmental health, communicable diseases, occupational health and other areas. The center focuses on communicable disease control and environmental health issues. The center was formerly the national center of the SES and, to a large extent, carries out generally the same sanitary and epidemiological activities as it did previously. The establishment of *raions*-level public

health departments is planned within the next two to three years, which would bring together the center's work and is carried out through the Regional Health Administrations. The management of the national immunization program forms a key part of communicable disease activities. National TB control efforts are also being expanded and updated to be in line with international guidelines. However, prisons, where TB is concentrated, do not fall under the center's mandate. Other key programs include prevention of viral hepatitis, diarrheal diseases and cholera, anti-rabies programs and iodine deficiency disorders prevention. In Moldova, environmental health issues are of great importance due to fears that large tracts of agricultural land were heavily contaminated during Soviet times by large-scale and indiscriminate use of pesticides and artificial fertilizers. Ironically, in early 2006, Russia's Chief Sanitary Inspector, Gennadiy Onischenko, claimed that unacceptably high levels of heavy metals and pesticides had been detected in Moldovan wines and banned their import.

### **3. Current International Activities that Involve Moldova's Public Health System**

The WHO has a large assistance program for Moldova to improve its public health and health provision systems. The WHO Country Office for Moldova was established in Chisinau in 1994. WHO's main assistance up to 2005 was in the following areas:<sup>156</sup>

- reproductive health and maternal and child health;
- control and prevention of non-communicable diseases and impact assessment of water safety;
- certification of the country as polio free;
- creation of a national list of essential drugs;
- creation of a national health information system and training of decision-makers to use data; and
- TB and HIV/AIDS.

For 2006–2007, the main planned joint activities are in the areas of:

- policy recommendations on health financing reforms;
- a performance assessment for the health system;
- human resources planning;
- the Making Pregnancy Safer initiative, linked to the national reproductive health strategy;
- to strengthen the national system for reporting and surveillance of HIV/AIDS, and improvement of prevention and care of HIV/AIDS;
- to strengthen the use of Directly Observed Therapy Short course (DOTS) for TB control;
- to address non-communicable diseases: tobacco control, cervical cancer screening, suicide prevention, violence and injury prevention, involvement of primary health care in treating the most common conditions;
- to provide for safe drinking-water;
- to strengthen the country's capacity to respond to health crises; and

- to insure blood safety.

There are other assistance programs similar to the one provided by the WHO that are operated by national agencies, such as the USAID and its European counterparts, but it is beyond the scope of this study to describe them. As far as international or bilateral agreements between Moldovan research institutions and foreign counterparts, in 2004 none could be identified. However, on December 7, 2004, Moldova joined the Science and Technology Center in Ukraine (STCU), thus becoming the STCU's fifth and newest recipient state. The STCU's Governing Board meeting notes from November 16, 2006, state that Moldovan scientists submitted 11 project proposals, and one had been funded.<sup>157</sup> However, no information was available about either the nature of proposed projects or the project proposal that was accepted.

#### **4. Analysis of the Moldovan Public Health System's Weaknesses and Proliferation Potential**

We are not in a position to analyze Moldova's public health system because unfortunately we do not have the information required for an evaluation. While some of the reports referenced in this study make a passing note of the Moldovan public health system, none provide any clues as to its effectiveness. Further, when one of the authors visited Moldova in May 2003,<sup>158</sup> he could not collect trustworthy information about the system at that time. He did receive anecdotal information during conversations with scientists at the National Scientific Practical Center of Preventive Medicine that public health was sadly under funded and therefore had lost most of its doctoral-level professionals to internal and external brain drain. Many professionals reportedly emigrated, especially to Russia, but there was no way to verify this information. Persons interviewed shared derisive comments over the government's plan to establish SES stations in each of the 32 *raions*, the situation in Soviet times. They alleged that there was neither funding for building nor equipping the new stations, nor to hire personnel to staff them. If the statements from Moldovan scientists are to be believed, the current Moldovan public health system is in very bad shape and barely survives on funding from foreign sources.

No Moldovan biological facility took part in the Soviet BW program and available evidence indicates that no Moldovan scientists ever worked on Soviet biological weapons issues. It is the opinion of the authors that Moldova does not pose a direct biological weapons threat. However, it is possible that an insider could steal pathogenic bacterial strains from the Section of Conventional and Extremely Dangerous Diseases laboratory's culture collection and supply them to unauthorized entities. This possibility increases over time, as newly hired staff's level of capabilities is limited due to the low wages offered. Due to the Section laboratory's location, it would be difficult for an unauthorized person to enter the premises.