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Medical Support in a Counter-guerrilla War: Epidemiologic Lessons Learned in the Soviet-Afghan War

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Introduction

Throughout history, armies and disease have been constant companions. Death from disease often exceeded battlefield deaths. Typhus, plague, cholera, typhoid and dysentery have decided more campaigns than the great generals of history. In the Crimean War of 1853 to 1856, the English and French combined forces against Russia. The French sent 309,000 men into the theater. Of these, some 200,000 were hospitalized--50,000 for wounds and 150,000 from disease.(1) English and Russian experience was similar. The following chart shows the ratio of combat losses to disease losses.

Crimean war casualties among the European forces in Crimea(2)

	Wounded	Killed in action, died of wounds	Sick	Died of disease
French	39,869	20,356	196,430	49,815
English	18,283	4,947	144,390	17,225
Russian	92,381	37,958	322,097	37,454

Modern medicine and inoculations have significantly decreased wartime deaths due to disease, but disease continues to sap the strength of modern armies. Some armies do a better job of practicing preventive medicine than others. As the Soviet Army learned in Afghanistan, a strong preventive medicine program and field sanitation program are essential for maintaining a force in a foreign climate.(3)

For the first six years of the war, the Soviet press barely mentioned the war. When they did, it was in terms of happy Soviet soldiers building hospitals and orphanages. The Soviet combat role was not mentioned, nor was the fact that the Soviets filled more hospitals and orphanages than they constructed. When General Secretary Gorbachev's glasnost policy was implemented in the Soviet Union, the true casualty picture slowly began to emerge. Of the 620,000 Soviets who served in Afghanistan, 14,453 were killed or died from wounds, accidents or disease. This is a modest 2.33% of the total who served. The rate of hospitalization during Afghanistan service, however, was remarkable. The 469,685 personnel hospitalized were an astounding 75.76% of those who served. Of these, 53,753 (or 11.44%) were wounded or injured. Fully 415,932 (or 88.56%) were hospitalized for serious diseases. In other words, of those who served in Afghanistan, 67.09% required hospitalization for a serious illness. These illnesses included 115,308 cases of infectious hepatitis and 31,080 cases of typhoid fever.(4) The remaining 233,554 cases were split between plague, malaria, cholera, diphtheria, meningitis, heart disease, shigellosis (infectious dysentery), amoebic dysentery, rheumatism, heat stroke, pneumonia, typhus, and paratyphus.(5)

**Category of Diseases Treated in
Soviet Army Hospitals by percentage (6)**

Category of Disease	Afghanistan 1980-1988	World War II 1941-1945
Infectious disease	56.50%	35.27%
Vitamin deficiency and eating disorders	0.09%	4.98%
Growths and tumors	0.26%	0.41%
Nervous and psychological	2.21%	4.58%
Eye disease	0.93%	2.34%
Ear, nose & throat	0.97%	>1.61%
Lung disease	4.10%	7.93%
Pneumonia (in above)	1.30%	3.72%
Circulatory system	1.80%	6.46%
Digestive system	3.90%	13.88%
Uro-genital system	1.30%	3.11%
Blood and blood-producing organs	0.02%	0.12%
Bones, joints & muscles	2.10%	1.39%
Skin and subdermal tissue	9.90%	7.67%
Poisoning	0.13%	0.63%
Noncombat injuries	15.10%	8.62%
Other disease	0.60%	1.00%

Total	100%	100%
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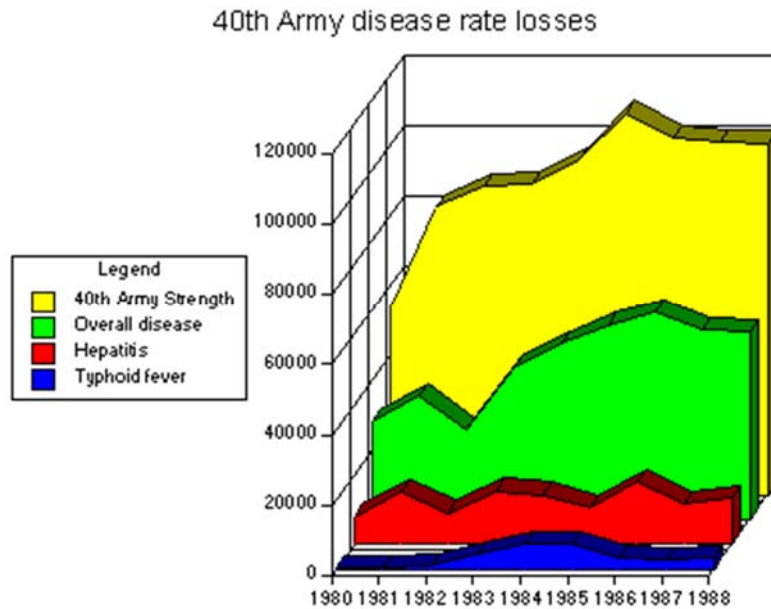
The above chart shows a dramatic increase in hospitalization for infectious disease and noncombat injuries--a result of deployment to a foreign climate where there are new strains of disease and the increased number of motorized vehicles in the Soviet Army in Afghanistan. The chart shows modest increases hospitalization for bones, joints and muscles as well as skin and subdermal tissue. Most other categories show a decrease, probably due to the fact that the Soviet combatants in Afghanistan were young conscripts, while the World War II Soviet Army included many conscripted middle-aged men.

The following chart shows the breakdown of infectious diseases by type:

Percentages of infectious disease treated by type in Soviet Army Hospitals(7)

Disease	1980	1981	1982	1983	1984	1985	1986	1987	1988
Typhus-paratyphus	1.8	2.3	5.9	13.5	18.5	16.9	7.8	7.5	10.6
Shigellosis	11.4	6.1	13.1	14.1	20.8	21.1	15.3	13.7	12.9
Viral hepatitis	46.1	50.1	40.9	47.4	34.8	28.2	42.5	36.0	50.5
Amoebic dysentery	----	----	----	0.1	1.3	3.1	6.5	10.2	6.1
Tonsillitis	4.9	4.1	5.2	2.6	2.6	4.0	6.1	3.7	3.2
Upper respiratory	30.6	30.2	29.0	18.0	14.3	16.2	14.5	14.0	10.9
Malaria	0.8	0.9	2.7	3.2	4.2	6.6	4.7	4.2	2.7
Other	4.4	6.3	3.2	1.1	3.5	3.9	2.6	10.7	3.1

Despite the best efforts of Soviet preventive medicine teams, hospitals, vector control teams, and water purification units, they were never able to get control of the spread of infectious disease. The main reasons for the high rate of disease among Soviet servicemen were lack of sufficient supplies of clean drinking water; lack of enforcement of basic field sanitation practices (a historic Soviet problem, partly due to the lack of a professional NCO corps); failure of cooks to wash their hands after defecation; infestations of lice and rodents; poor diet; and failure to provide soldiers with clean uniforms and underwear on a regular basis.



The 40th Army was the primary Soviet force in Afghanistan. In addition, Soviet KGB and MVD forces served in Afghanistan along with some Soviet advisors to the Afghan Army and a Soviet civilian work force which supported the Soviet Army.(8) The above graph shows that the Soviet 40th Army had a very serious problem with disease prevention and that at any time over one-quarter of the troop strength might be unavailable due to disease. In October through December of 1981, the entire 5th Motorized Rifle Division was rendered combat ineffective when over 3000 of its men (over one-quarter of its strength) were simultaneously stricken with hepatitis. The sick included the division commander, most of his staff and two of the four regimental commanders.(9) Every year, one-third of the entire 40th Army was stricken with some form of serious infectious disease.(10)

Hepatitis

The major causes of hepatitis are viruses , alcohol abuse, and drug abuse. Vaccines can protect personnel from Hepatitis B, and troops going to Afghanistan received this vaccination. There are no vaccines against hepatitis A and hepatitis nonA-nonB. Hepatitis A was the most prevalent form of hepatitis among Soviet soldiers in Afghanistan (95%-the remaining 5% was hepatitis nonA-nonB).(11) Infectious hepatitis is highly infectious and is spread by the fecal-oral route--normally the result of failure to wash one's hands or drink clean water. The incubation period in Afghanistan was normally 37 days; recovery took six to eight weeks with relapses.

The combat tour was 18 months for conscripts and two years for officers. First-year soldiers were 2.5 times more likely to contract hepatitis A than second-year soldiers. The greatest number of hepatitis cases were contracted in the fall and winter.(12) Epidemiologic analysis showed that from 31 to 74% of cases of infectious hepatitis were contracted in base camp, 13 to 45% were contracted in the field, 8 to 15% were contracted in outposts and 5 to 14% were contracted while on convoy duty.(13) This analysis is surprising, because one would expect that the best sanitation

prophylaxis would be in the base camps. Instead, most of the hepatitis was contracted where it could have been best prevented.

Upper Respiratory Disease

Pneumonia and bronchitis were serious problems for the 40th Army, especially during the first four years of the war. The following depicts the percentage various types of upper respiratory disease during 1982-1984:(14)

Percentage of respiratory diseases treated by type

Disease	Enlisted Personnel			Officers		
	1982	1983	1984	1982	1983	1984
Acute pneumonia	52.0	57.0	65.1	39.0	52.0	47.8
Acute bronchitis	30.0	24.0	25.8	41.0	22.0	34.0
Chronic bronchitis	5.4	3.5	3.0	8.1	12.0	11.2
Chronic pneumonia	2.0	0.5	0.1	--	1.0	0.7
Acute respiratory infection	10.6	15.0	6.0	11.9	13.0	6.3
Totals	100	100	100	100	100	100

Servicemen contracted acute pneumonia all throughout the year, but the majority of the cases (and more serious and contagious cases) occurred in the fall and winter (65% versus 35% in the spring and summer). Approximately 10% of the cases initially diagnosed as acute respiratory infection were actually typhoid fever.

Comparing types of pneumonia(%)(15)

Symptoms	Afghanistan Service	Army-wide Norm
Mycoplasmae pneumonia (soldiers/NCOs)	89/75	86.6/75
Lobar pneumonia (soldiers/NCOs)	11/25	6.0/5.6

This chart shows that Soviet soldiers in Afghanistan were as likely to contract mycoplasmae pneumonia as the rest of the Soviet Army but were more likely to contract lobar pneumonia. The army-wide figures do not total 100%, but no explanation is given. Why there is any difference between the private and NCO rate is a mystery since they are the same age and live under the same conditions.

Comparing time of service when pneumonia was contracted(%)(16)

Time when infected	Afghanistan Service	Army-wide Norm
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1st year of service	82.0	80.1
2nd year of service	18.0	19.9
1st month of service	17.1	29.1
1st 3 months of service	43.9	44.1
1st 6 months of service	70.7	59.3
6-12 months of service	29.3	20.9

Most Soviet soldiers had six months of training before being sent to Afghanistan. Further, many soldiers were sent to Afghanistan as part of a levy after serving a year in a Soviet military district or group of forces in Europe or Mongolia. Therefore, a comparison of time-in-service for soldiers who contracted pneumonia in Afghanistan and in the rest of the force seems skewed. Further, the Afghanistan service figures for the 1st six months of service and 6-12 months service add up to 100%, while the Army wide norms require the addition of the 2nd year service figure to reach the 100% mark. Again, these figures are skewed.

Hospitalization time required for pneumonia (%)⁽¹⁷⁾

Time	Afghanistan service	Army-wide Norm
Hospitalization 1-2 days	42.0	40.9
Hospitalization 3-4 days	24.0	36.6
Hospitalization 5-7 days	22.0	15.3
Hospitalization 8-10 days	4.0	4.3
Hospitalization over 10 days	8.0	2.9

Severity and complications of pneumonia (%)⁽¹⁸⁾

Severity	Afghanistan service	Army-wide Norm
Mild cases	22.0	48.0
Moderate cases	50.0	39.3
Severe cases	28.0	12.2
Grave cases	30.0	16.7
Complications, pleural infusion, mild case worsens	14.0	4.2
Delirium	65.8	15.0

This chart shows some double counting as the types of pneumonia total over 100%. Some of this must be due to the instances where a mild case worsens and the patient is double-counted.

Statistics show that 6% of Soviet soldiers in Afghanistan who developed pneumonia also had an illness of the digestive tract and that 30% were 10-15% below ideal body weight. The possibility of a servicemen in Afghanistan contacting a severe or grave case of pneumonia was twice as high as the Soviet soldier serving elsewhere. Incidents of bronchial pneumonia in Afghanistan were also double the army-wide average.(19)

Physicians had difficulty making the correct diagnosis, since the laboratory results and patients symptoms varied so widely from the usual results and symptoms. This created a delay in starting the correct treatment and in returning the soldier to duty. The following chart shows a wide variance with common symptoms.(20)

Comparing pneumonia symptoms (%)

Symptoms	Afghanistan service	Army-wide Norm
General weakness	92	100
Headache	54	97
Insomnia	22	87
Thirst, dryness of mouth	26	98
Chills	44	84
Loss of appetite	30	99
Aching muscles and joints	16	48
Dizziness	38	92
Fatigue	8	97
Paleness	26	97
Inflammation of the upper respiratory tract	52	97
Cough	96	94
Paroxysms (over 25 per minute)	32	12
Shortness of breath	42	67
Wheezing: dry/damp	38/70	46\5
Tachycardia (over 100 per minute)	22	66
Low blood pressure	24	72
Weakened tone	8	85
Hyperresonance	8	19
Stomach ache	8	57
Coating of the tongue/swelling	34/2	100/100

Flatulence/diarrhea	4/6	68/55
Hepatomegaly	20	95
Splenomegaly	4	67

Lessons learned?

In Afghanistan, many of the combat units were spread out in small outposts where hot meals and clean water were not available. Initially, the Soviet soldiers in isolated outposts ate nothing but dry rations.(21) The lack of regularly-prepared, balanced meals weakened the soldiers' resistance to disease. The accumulation of ration cans and other trash provided breeding grounds for rats and disease. As the war progressed, an effort was made to serve everyone a hot meal and tea for breakfast and dinner. Isolated units still had a dry ration for lunch. To get hot meals to some of the troops, the Soviets developed air-droppable containers.

Yet hot meals were a mixed blessing since one of the primary sources of infection were the cooks. Cooks had lice, intestinal pathogens, and little officer supervision. The personal hygiene of the cooks was no better, and sometimes worse, than the rest of the Soviet soldiers. The Soviets recognized this and began inspecting the cooks and conducting monthly medical examinations. Their laboratory results are as follows:(22)

Laboratory findings of pathogenic intestinal bacteria among cooks (%)

Organism	1980	1981	1982	1983	1984	1985	1986	1987	1988
Shigellosis	0.2	0.3	3.7	3.1	3.1	3.3	5.3	5.2	4.5
Typhus-paratyphus	---	0.1	1.4	3.7	2.8	2.7	3.1	3.0	1.2
E. coli & other salmonella	---	---	0.2	0.2	0.3	0.7	1.2	4.1	2.1

These laboratory results are staggering. It only takes a few sick cooks to keep the hospital sick-bays filled, and the Soviets were never able to keep all the cooks clean and sanitary.

Physical conditioning and acclimatization is very important in disease prevention. Eventually, most soldiers trained for six months in mountain warfare schools before they arrived in Afghanistan. Physical conditioning was stressed as was field craft, first aid, and field sanitation. However, physical training in the Soviet Union did not fully prepare the soldiers for the realities of the rugged field conditions of Afghanistan. The average field combat load in Afghanistan was 32 kilograms (70.5 lbs). Despite the rigorous physical conditioning program, soldiers were unable to routinely carry this much weight at high altitudes. The Soviets eventually developed special light-weight field gear , but never produced it in enough quantity to get it to all the troops who needed it. Troops were rapidly debilitated by the harsh field conditions and consequently more prone to disease.

Rats, lice and mosquitos were a constant problem. Garbage was not quickly policed up and properly disposed of. Garbage dumps were often collocated with camps and base camps. Stagnant pools of water were not drained or treated for mosquito larvae. Troops were dusted with DDT, but since clothing and bedding was seldom washed or exchanged, lice were a constant feature of life in the 40th Army. Typhus and malaria were two consequences of inadequate vector control.

The water in Afghanistan has a high bacteriological content. Despite warnings and training, Soviet troops often drank untreated water. This was often due to the failure of the Soviet logistics system to provide clean water to troops at remote locations. Sometimes, Soviet soldiers drank untreated water because they did not like the taste of treated water and had grown up drinking water from all sources without apparent ill effects. The untreated water often carried typhus and amoebic dysentery. The Soviets began issuing boiled water treated with pantocides to their soldiers. Water purification points were set up at mess halls, and cisterns were installed to store purified water. Large garrisons built pumping stations with chlorination units.(23) Despite these efforts, the Soviets were unable to guarantee adequate supplies of clean water to all the force or insure that the troops drank it.

Basic field sanitation remained a Soviet problem throughout the war. Although field latrines were dug and flush latrines were installed in base camps, Soviet soldiers often did not bother to use them and relieved themselves close to the living and dining areas. The troops often did not wash their hands after relieving themselves. Troops could shower (or visit the steam bath) weekly at base camps, but seldom bathed in the field. Hepatitis, shigellosis, and other diseases resulted.

The Soviets underestimated the amount of medical support necessary to support the 40th Army. They were well-equipped to handle the wounded, but they were unprepared to deal with the large number of sick soldiers. In order to relieve overcrowded hospitals, the Soviets evacuated large numbers of their sick and wounded to military hospitals in the Soviet Union and in Warsaw Pact countries. They also established a infectious disease hospital at Bagram, Afghanistan with a rehabilitation center annex for recovering infectious-disease patients. The Bagram Rehabilitation Center consisted of a command element, eight companies, a medical station, and a supply element. Each company had six combat arms officers and six warrant officers to administer the program and control the patients. The rehabilitation program included medical treatment, a two-hour rest after dinner, five meals a day, therapeutic physical training, vitamin therapy, psychotherapy, and occupational therapy. Patients were discharged after full recovery.(24) Despite these efforts, the Soviet medical establishment was hard-pressed to deal with their patient load resulting from disease.

After the war, the Soviets and then the Russians studied the U.S. Army deployment to the Persian Gulf for Desert Storm. Among the disease prevention measures taken by the Americans which impressed the Russians were the supply of 80 liters of water per person per day, the wide use of bottled water, the ration heating units on US tanks and personnel carriers, the MRE ration, the issue desert chocolate bar which can withstand 150 Fahrenheit without melting, and the issue field clothing and load-bearing equipment.(25)

In 1994, Russian military doctors recommended the following measures be taken when deploying troops to another region:(26)

- conduct a rate of personnel illness forecast, taking into account the particular environmental factors which will impact on servicemen, and then coordinate logistic, engineer and medical support to deal with the problem;
- immunize personnel well in advance of the deployment and train them on field sanitation practices for the new region;
- perform an advance reconnaissance of water sources and conduct a laboratory analysis of water quality;
- seize and protect water sources;
- establish a system to deliver clean water to field sites and maintain water stores on site;
- routinely repurify any piped water from local city systems;
- provide units and soldiers with water purification tablets or filters;
- establish reserves of bottled water;
- plan for the early delivery of water purification systems such as filtration systems and boilers;
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- stock clean water reserves for raiding parties, combat operations, security outposts, and guards;
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- train the soldiers how to maintain the purity of drinking water and operate water purification equipment;
- plan and conduct environmental protection measures, insure that the troops use field latrines and dispose of garbage properly, insure that troops wash regularly, and insure that latrines and garbage dumps are disinfected regularly;
- insure that troops receive regular hot meals and do not subsist on canned food for extended periods;
- supply battalions and companies with enough mermite-type containers to keep food hot until it is delivered;
- start issuing multivitamins to the troops immediately when the redeployment order is received;
- supply enough equipment to supply each mess with at least 20 liters of water (including 16 liters of hot water) per person per day;
- provide adequate sites for personnel to wash their mess kits;
- monitor prepared food portions to insure that soldiers are receiving their full ration;(27)
- routinely issue clean underwear and bedding;
- build a steam bath for every battalion, separate company, or platoon;
- enforce scheduled bathing schedules for the troops;
- regularly inspect for lice and disinfect when necessary;
- disinfect the site within three hours whenever a soldier with an infectious disease is discovered;
- immediately isolate soldiers with infectious disease and hospitalize them within 24 hours;
- maintain sufficient contingency stocks of immunoglobulins, vaccines, anatoxins, and antibiotics to protect all personnel whether prior to deployment, upon deployment, during combat and during convalescence.

Conclusions

The Soviet Army in the field was never a particularly clean army. They dug latrines but seldom used them. They defecated in their mess and bivouac areas. They dumped unwrapped bread directly on the ground and left it there until they served it. They seldom washed their hands and did a poor job of washing their mess kits. They threw cans, trash, and uneaten bits of food around the bivouac area. Showers and clean clothes in the field were occasional at best. Barracks life was not always much of an improvement.

In a European peace-time environment, the above was not much of a problem. Most of the soldiers had natural immunities to many of the local diseases and the command never had to pay a price for sick soldiers. Soldiers were cheap and plentiful. This was not the case in Afghanistan, however, where every soldier was necessary and in short supply. The 40th Army began to pay the price for years of Soviet neglect and poor field craft and hygiene. The Soviets were unable to logistically support the size army they felt they needed to successfully prosecute the war in Afghanistan. Their inability to effectively control infectious disease drastically cut into their present-for-duty strength. Combat units were often understrength by a third of their authorized strength. Two-company battalions and two-battalion regiments were common due to disease and other problems.

Part of the reason that the Soviets could not control infectious disease was their lack of a professional NCO corps. The Soviet NCO was conscript who had attended a special six-month course. He had no moral or actual power over his fellow soldiers. The business of discipline, inspection and enforcing standards fell on the platoon leader--a junior lieutenant. He personally had to ensure that all his troops were lice-free, washed their hands, drank clean water, disposed of their trash properly, prepared food correctly, and dug and used latrines. He was also responsible for maintenance, training, and combat. Without proper NCOs, the lieutenant was unable to accomplish all his duties correctly and lack of adequate field sanitation was one of the results.

The Soviets received brutal lessons in Afghanistan on the importance of diet, physical conditioning, pure water, field sanitation, vector control, and adequate medical support. Yet, after the Afghan War, neither the Soviet Army nor its descendent, the Russian Army, had learned these lessons or taken them to heart. In 1988, Soviet soldiers were rushed into Armenia to provide earthquake relief. Their poor food, lack of field sanitation, and lack of clean clothing resulted in mass illnesses which required rescuing many of the rescuers. In 1989, the Soviet Kostroma airborne regiment, the Akhalkalaki motorized rifle regiment, and the Kutaisi air assault brigade moved into Tbilisi, Georgia to put down rioting. The troops had one or no changes of underwear for an extended tour.(28) In 1992, the Russian 14th Army fought in Tirasapol, Moldova. Only the brevity of the combat prevented a serious outbreak of disease from the lack of clean water for drinking and cooking. In 1992, the Russian 201st Motorized Rifle Division deployed to the border between Afghanistan and Tadjikistan to help guard the border of this newly-independent republic against the mujahideen. In the rush to get forces forward to the border, the command again neglected to establish sanitary messhalls and field mess facilities and to provide adequate, pure water for drinking and washing. As a result, viral hepatitis, intestinal infections, and malaria mowed down the 201st Motorized Rifle Division and filled hospital

wards with entire squads and gun crews.(29) Initial reports from the fighting in Chechnya indicate that disease is again a limiting factor in the number of troops that the Russians can deploy.

In recent years, the U.S. Army has had an excellent record of disease prevention, field sanitation and disease control. However, as the United States conducts foreign policy by membership in multi-national alliances, the chances increase that the U.S. Army will have allies whose record in field sanitation and disease prevention is similar to that of the Soviets. The U.S. Army medical professionals could find themselves providing medical support to these allied forces. If so, the U.S. Army medical community needs to prepare to fight epidemics, not isolated cases.

ENDNOTES:

1. Hans Zinsser, *Rats, Lice and History*, Boston: Little, Brown and Company, 1934, 165.
2. Ibid. 3. The Soviet invasion of Afghanistan on 25 December 1979 thrust Soviet ground forces into the middle of a civil war to fight a guerrilla enemy on some of the roughest terrain on earth. Their vain attempt to prop up an unpopular Marxist regime ended with their withdrawal which they completed on the 15th of February 1989. Discontent with the Soviet leadership's handling of the Afghanistan War was one of the causes of the disintegration of the Soviet Union. In Afghanistan, the fighting continues, but no longer between Afghan communists and Afghan Muslims. Now, the various Afghan resistance groups are fighting one another for control of this dry, mountainous South Asian land.
4. G. F. Krivosheev, *Grif sekretnosti snyat* [The secret seal is removed], Moscow: Voenizdat, 1993, 401-405. In the original, the figures are given as 415,932 hospitalized for disease, including 115,308 cases of infectious hepatitis, 31,080 cases of typhoid fever and 140,665 cases of other existing disease. This leaves 128,889 cases or 39.99% of the total unaccounted for. I added the 128,889 to the 140,665 figure.
5. V. S. Perepelkin, V. F. Korol'kov, V. F. Kolkov, V. A. Mandrik and P. N. Ogarkov, "Uroki bor'by s kishhechnymi infektsiyami v period voyny v Afganistane" [Lessons in the struggle with intestinal infections during the war in Afghanistan], *Voenno-meditsinskiy zhurnal* [Military medical journal, hereafter VMZ], July 1991, 27-31.
6. V. T. Ivashkin, "Opyt organizatsii meditsinskoy pomoshchi bol'nym 40-i armii v Afganistane" [The experience of the medical care to the sick servicemen of the 40th Army in Afghanistan], VMZ, November 1992, 13.
7. Perepelkin, 28. What is missing from this chart is typhoid fever. According to official statistics, typhoid fever accounted for 7.47% of infectious cases, yet it is not in this chart. It is probably included in the upper respiratory category.
8. KGB was the Committee for Government Security. Their duties included intelligence, counter-intelligence, prison camp administration and border guards. They also fielded a potent field force. The KGB role in Afghanistan was supporting the Afghan equivalent-the KHAD and

manning border guard posts within Afghanistan. The MVD was the Ministry of Internal Security. They were a large armed force which ran prison camps, provided crowd control and anti-riot forces and performed a rear-area security function in wartime. The Soviets advised the Afghan Combat Police-the Sarandoy.

9. Boris V. Gromov, *Ogranichennyy kontingent* [Limited contingent], Moscow: Progress Publishers, 1994, 275. The chart only shows personnel in hospital with hepatitis, so the personnel confined to quarters with the disease are not shown. The 5th Motorized Rifle Division, roughly one-fifth of the total strength of the 40th Army, exceeded the annual rate for hepatitis in two months. Thus the official statistics, although staggering, are on the low side.

10. E. A. Nechaev, "Meditsinskaya reabilitatsiya uchastnikov voyn i lokal'nykh vooruzhennykh konfliktov" [Medical rehabilitation of veterans of wars and local conflicts], *VMZ*, February 1994, 5.

11. Perepelkin, 29.

12. V. F. Korol'kov, P. I. Ogarkov, & V. A. Mandrik, "Profilaktika kishhechnykh antropozov sredi lichnogo sostava" [Prophylaxis of intestinal anthroponoses in servicemen], *VMZ*, April-May 1992, 73.

13. Perepelkin, 29.

14. V. V. Zakurdaev, "Kharakter patologii organov dykhaniya u voennoclyzhashchikh v usloviyak Afganistana" [Traits of respiratory system pathology in servicemen in Afghanistan], *VMZ*, June 1992, 39.

15. Ibid.

16. Ibid.

17. Ibid.

18. Ibid.

19. Ibid.

20. Ibid, 40.

21. Dry rations are similar to the old U.S. Army C ration. There were three types of dry rations. The first contained a can of meat, some crackers or toast, some jam and a tea bag. The second contained two cans of meat mixed with oatmeal. The third contained a can of meat and a can of vegetables or fruit.

22. Perepelkin, 30.

23. I. Konyshchev and A. Grib, "Opyt, kotoryy nichemu ne uchi" [Experience which teaches nothing], Armeyskiy sbornik [Army assembly], No 2, August 1994, 36.
24. Ye. V. Nemytin and V. V. Boldyrev, "Organizatsiya reabilitatsii infektsionnykh bol'nykh pri mnogokratnoy peregruzke gosptalei" [Rehabilitation management of infectious patients in overcrowded hospitals], VMZ, April-May 1992, 38-39.
25. Ibid, 38.
26. Ibid, 39.
27. Theft and resale of soldiers' food has a long history in the Russian and Soviet Army.
28. The Soviet (and Russian) Army issues three sets of underwear per soldier. Theoretically, the soldier wears one set, one set is held in regimental stores and one set is at the division laundry point. Underwear is supposed to be changed once a week, but due to shortages, losses and breakdowns in the supply system, the soldier often wears his single set of underwear for months at a time. The situation with uniforms is not much better. The soldier has one field/work uniform and pair of boots. He wears these continually for six months. When he washes his uniform, he wears it damp the next day.
29. Konyshchev, 36-37.