Seen but not Heard: Injuries and Deaths from Landmines and Unexploded Ordnance in Chechnya, 1994–2005

Oleg O. Bilukha, MD, PhD;[1] Muireann Brennan, MD, MPH;[1] Mark Anderson, MD, MPH;[1] Zaur Tsitsaev, BS;[2] Eliza Murtazaeva, BS;[2] Ramzan Ibragimov, BS[3]

1. International Emergency and Refugee Health Branch, Division of Emergency and Environmental Health Services, National Center for Environmental Health, Centers for Disease Control and Prevention, Atlanta, Georgia USA
2. United Nations Children's Fund, Office for North Caucasus, Nazran, Republic of Ingushetia, Russian Federation
3. Voice of the Mountains Non-Governmental Organization, Grozny, Republic of Chechnya, Russian Federation

Correspondence:
Oleg Bilukha, MD, PhD
National Center for Environmental Health
Centers for Disease Control and Prevention
1600 Clifton Rd, Mailstop E-97
Atlanta, GA 30333 USA
E-mail: OBilukha1@cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the views of the Centers for Disease Control and Prevention or the United Nations Children's Fund.

Funding/Support
No additional funding.

Keywords: Chechnya; injury; landmine; unexploded ordnance

Abbreviations:
IMSMA = Information Management System for Mine Action
NGO = non-governmental organization
UNICEF = United Nation's Children's Fund
VoM = Voice of the Mountains

Received: 12 December 2006
Accepted: 07 March 2007
Revised: 12 March 2007

Web publication: 18 December 2007

Abstract
Introduction: Due to more than a decade of armed conflict and civil unrest, Chechnya is among the regions most affected by landmines and unexploded ordnance worldwide.
Hypothesis: The study was undertaken to assess the magnitude of injuries and deaths due to landmines and unexploded ordnance in Chechnya between 1994 and 2005 and to describe epidemiologic patterns and risk factors for these events.
Methods: Surveillance data that included 3,021 civilian non-combatants injured by landmines and unexploded ordnance in Chechnya during 1994–2005 were analyzed. Local non-governmental organizations in collaboration with the United Nations Children's Fund conducted victim data collection using trained staff to interview victims or their families. Surveillance data were used to describe injury trends, victim demographics, injury types, risk behaviors, and types of explosives related to landmine and unexploded ordnance events.
Results: The largest number of injuries occurred in 2000 (716, injury rate 6.6 per 10,000) and 2001 (640, injury rate 5.9 per 10,000). One quarter of all victims were younger than 18 years, and 19% were females. The case-fatality rate was 23%. Approximately 40% of victims were injured by landmines, 30% by unexploded ordnance, and 7% by booby traps. A large proportion of both children and adults were injured while traveling or performing activities of economic necessity; 29% of children were injured while tampering with explosives or playing in a contaminated area. The proportion of victims with lower limb amputations was similar among children and adults (14% and 17%, respectively), whereas the proportion of victims with upper limb amputations was three times higher in children than in adults (12% and 4%, respectively). Most accidents that occurred while the victim was traveling or performing activities of economic necessity, were caused by landmines, while most accidents that occurred while the victim was playing near an explosive device or tampering with it were caused by unexploded ordnance.
Conclusions: Civilians in Chechnya experienced the highest rates of injury from landmines and unexploded ordnance ever documented, 10 times higher than injury rates reported from such highly affected countries as Afghanistan, Angola, or Cambodia. Urgent efforts to identify, mark, and clear mined and/or contaminated with unexploded ordnance areas are needed to prevent further civilian injuries and deaths.

Bilukha OO, Brennan M, Anderson M, Tsitsaev Z, Murtazaeva E, Ibragimov R: Seen but not heard: Injuries and deaths from landmines and unexploded ordnance in Chechnya, 1994–2005. ***Prehospital Disast Med*** **2007;22(6):507–512.**

Introduction

Landmines and unexploded ordnance continue to pose significant public health and socioeconomic problems in conflict and post-conflict settings.[1–4] Worldwide, the annual toll of casualties from landmines and unexploded ordnance is estimated at 15,000 to 20,000.[4]

Chechnya, a small Republic in the North Caucasus region of the Russian Federation, has a land mass about half the size of Belgium (15,300 km^2) and a population of roughly one million people.[5] For more than a decade, the population of this tiny Republic has been among those most heavily affected by landmines and unexploded ordnance worldwide.[6,7] This report shows that for several years during the past decade, the rate of injury in Chechnya from these devices was higher than in any other country in the world for which data were available. In 2000 and 2001, injury rates in Chechnya were 10 times that of the world's most affected countries—Afghanistan, Cambodia, and Angola. This epidemic has gone largely unreported, and this apparently is the first published scientific analysis of data on such injuries from this region.

In September 1991, following the dissolution of the Soviet Union, Chechnya declared independence from the Russian Federation. In 1994, Russian troops entered Chechnya in what was later called the First Chechen Campaign. Fighting continued until August 1996, when peace agreements were signed and Russian troops withdrew from the region in November. However, the Republic continued to claim independence, and relations with the Russian Federation remained tense. In September 1999, Russian troops once again entered Chechnya, beginning the Second Chechen Campaign. This followed a series of bombings of apartment buildings in Russia (blamed on Chechen rebels) that killed several hundred people and an attack by Chechen guerrilla fighters on the neighboring Republic of Dagestan. In February 2000, Russian forces captured the Chechen capital of Grozny, and the war entered a guerrilla phase. Currently, though active fighting is largely over, insecurity persists, and large detachments of Russian military, police, and security forces still are stationed in Chechnya.

Landmines were used extensively by Chechen guerrilla forces and Russian troops during both the First and Second Chechen Campaigns.[4,8,9] In addition, aerial bombardment, shelling, and active fighting in densely populated areas resulted in widespread contamination with unexploded ordnance. These weapons pose a threat as serious and are as deadly as landmines. In 2005, the Chechen Ministry of Agriculture estimated that 30% of all agricultural land in Chechnya was affected by landmines and/or unexploded ordnance. The Danish Demining Group working in Chechnya since 2000 reported in 2005 that agricultural land and forested areas in Chechnya were heavily contaminated with landmines and unexploded ordnance, and that unexploded ordnance is likely to pose even more serious threat than landmines.[4] Furthermore, it reported that there was little or no marking or fencing of potentially dangerous areas, which would pose additional threats as the security situation improves, allowing more free movement of the population. Both the First and Second Chechen campaigns saw large movements of refugees and internally displaced populations during the heat of the conflict, which may have added to the burden of injury and death.

In a joint statement released in April 2006 in Moscow, the United Nations Children's Fund (UNICEF) and the European Commission reported that >3,000 people were injured and nearly 700 killed in Chechnya by landmines and unexploded ordnance since the armed conflict started in 1994.[10] This study was undertaken to assess the magnitude of injuries and deaths due to landmines and unexploded ordnance in Chechnya between 1994 and 2005 and to describe epidemiologic patterns and risk factors for these events.

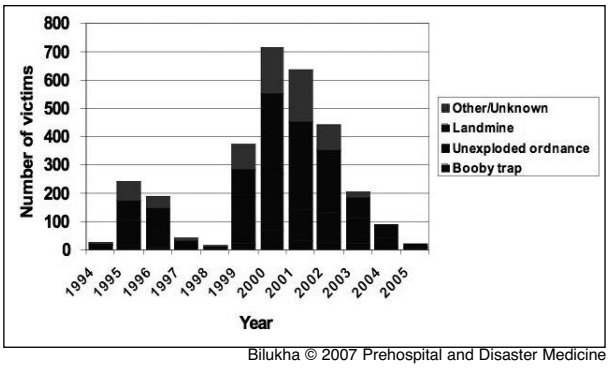
Methods

Data on victims injured or killed by landmines and unexploded ordnance in Chechnya between 1994 and 2005 were obtained from UNICEF and Voice of the Mountains (VoM), a Chechen non-governmental organization (NGO) that collects victim data and manages the database.

The VoM, in collaboration with UNICEF, began collecting data on victims of landmines and unexploded ordnance in Chechnya in October of 2000. In 2001, the Geneva International Center for Humanitarian Demining introduced the Information Management System for Mine Action (IMSMA) in Chechnya, a standardized database widely used by the United Nations (UN) worldwide. Representatives of three local NGOs (VoM, Minga, and Let's Save the Generation) were trained in victim data collection by Azerbaijan National Center for Mine Action. Voice of the Mountains staff were trained in data entry, management, and analysis. The UNICEF personnel also identified and trained 15 local mine surveillance monitors (one for each of the 15 districts of Chechnya) who act as liaisons to communities and governmental structures (district administration, district hospital, the police, and the school system), assuring complete detection of victims of landmines and unexploded ordnance.

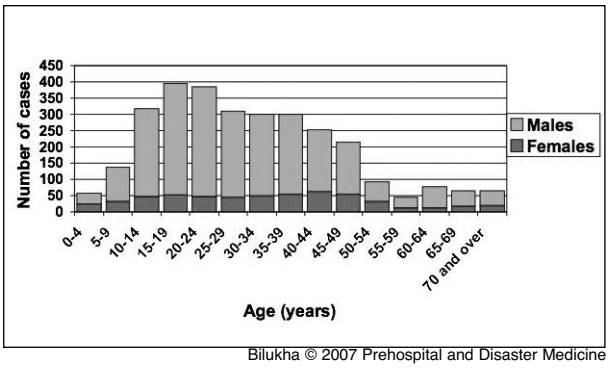
Non-governmental organization staff trained in data collection obtained the initial reports on victims of landmines and unexploded ordnance or their families from a variety of sources, including the International Committee of the Red Cross, the Danish Demining Group, local NGOs providing humanitarian assistance to Chechen civilian and refugee populations, district administrations, district hospitals and health centers, and local police stations. After obtaining the victim's name and address, trained NGO staff interviewed the victim or victim's family using the standard IMSMA data collection form. This form conforms to the standard questionnaire of the World Health Organization recommended for use in the surveillance of landmine and unexploded ordnance injuries worldwide. Information collected includes the date and location of the accident, victim's demographics, circumstances of the accident (e.g., victim's activity at the time of accident, type of explosive device that caused the accident), and type of injuries sustained by the victim. Verbal informed consent was obtained before the interview.

Only data on *civilian non-combatants* were included in the database, while those involved in military or guerrilla activity at the time of the accident, victims of terrorist attacks, and victims injured directly during active fighting (e.g., victims of aerial bombardment, shelling, rocket attacks) were excluded. Both retrospective data on accidents that occurred since 1994 and prospective data on new injuries occurring since 2000 were collected.



Bilukha © 2007 Prehospital and Disaster Medicine

Figure 1—Number of victims with injuries from landmines and unexploded ordnance per year, by the type of explosive device causing the accident, Chechnya, 1994–2005



Bilukha © 2007 Prehospital and Disaster Medicine

Figure 2—Age distribution by sex, of victims with injuries from landmines and unexploded ordnance, Chechnya, 1994–2005

Duplicate entries in the victim database were excluded by comparing victims' demographics as well as time and location of the accident. The official population estimate (1.08 million inhabitants) from the census conducted in Chechnya in October of 2002 was used as a denominator to calculate injury rates.[5] Statistical analyses were performed using JMP software (release 5.0, SAS Institute Inc, Cary, NC).

This study was determined to be exempt from institutional board review by the Institutional Review Board of the Centers for Disease Control and Prevention as it involved secondary analysis of routinely collected surveillance data used for programmatic purposes. Personal identifiers were not included in the final data set used for analyses.

Results

Analysis included 3,021 reported victims of landmines and unexploded ordnance who were injured or killed in Chechnya during 1994–2005. Two distinct phases of fighting can be seen corresponding to the First and Second Chechen Campaigns (Figure 1). During the First Chechen campaign, the highest number of injuries (243) was recorded in 1995, with a rate of 2.3 injured per 10,000 for the year. During the Second Campaign, the largest number of injuries occurred during 2000 and 2001 (716 and 640, respectively) resulting in population injury rates of 6.6 per 10,000 for the year 2000 and 5.9 per 10,000 for the year 2001 (Figure 1). Injury rates in 1999 and 2002 were also high: 3.4 and 4.0 per 10,000 per year, respectively.

About one quarter of all injuries occurred among children <18 years of age. Nineteen percent of all victims were females. Age distribution of injuries by sex of victim is presented in Figure 2. The highest number of injuries occurred in males aged 15–24 years. Approximately 40% of all victims were injured by landmines, 30% by unexploded ordnance, and 7% by booby traps. The device that caused the accident was unknown for 23% of the victims (Table 1). Large proportions of both children and adults were injured while traveling or performing activities of economic necessity (farming, tending animals, collecting wood, food, or water). In addition, nearly 29% of children were injured when they were playing in a contaminated area or tampering with an explosive device.

Twenty-three percent of victims died as a result of the accident (Table 1). The case-fatality rate was higher in adults (25%) than in children (17%); it also was higher in males (24%) than females (17%). Children were more likely to be injured by unexploded ordnance and to sustain upper body injury compared with adults. The percentage of victims with lower limb amputations was similar among children and adults (14% and 17%, respectively), whereas the percentage of victims with upper limb amputations was three times higher in children than in adults (12% and 4%, respectively) (Table 1). Most of the accidents that occurred while the victim was traveling or performing activities of economic necessity were caused by landmines, while most accidents that occurred while the victim was playing near an explosive device or tampering with it were caused by unexploded ordnance (Table 2).

Discussion

This study shows that over the past 12 years of armed conflict and civil unrest, the civilian population in Chechnya experienced the highest rates of injuries and deaths due to landmines and unexploded ordnance ever documented. Owing to the relatively small population at risk, the resulting injury rates from landmines and unexploded ordnance were unprecedented: 6.5 per 10,000 in 2000 and 5.8 per 10,000 in 2001. In comparison, rates of injury from landmines and unexploded ordnance in Afghanistan, Angola, and Cambodia (commonly perceived as the world's most affected countries) in 2000 were approximately 0.5, 0.7, and 0.6 per 10,000 per year, respectively.[6] Even with 93 recorded casualties in 2004, the rate of injury in Chechnya was the highest worldwide (0.9 per 10,000 per year).

The 2002 census is the only official census conducted in Chechnya between 1990 and 2005 and generally is considered to be an overestimate of the population living inside the republic at that time.[5] This population estimate (1.08 million inhabitants) was used as a denominator, which produced lower, more conservative estimates of population injury rates. Unofficial results of another census conducted

	Child (0–17 years)			Adult (18 years or older)			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Total victims (% of total)	634 (82.1)	138 (17.9)	772 (100)	1,817 (80.8)	432 (19.2)	2,249 (100)	2,451 (81.1)	570 (18.9)	3,021 (100)
Type of explosive device									
Antipersonnel mine	197 (31.1)	26 (18.8)	223 (28.9)	685 (37.7)	96 (22.2)	781 (34.7)	882 (36.0)	122 (21.4)	1,004 (33.2)
Antitank mine	22 (3.5)	12 (8.7)	34 (4.4)	147 (8.1)	42 (9.7)	189 (8.4)	169 (6.9)	54 (9.5)	223 (7.4)
Booby trap	58 (9.2)	7 (5.1)	65 (8.4)	136 (7.5)	13 (3.0)	149 (6.6)	194 (7.9)	20 (3.5)	214 (7.1)
Other unexploded ordnance	200 (31.6)	55 (39.9)	255 (33.0)	475 (26.1)	162 (37.5)	637 (28.3)	675 (27.5)	217 (38.1)	892 (29.5)
Unknown	157 (24.8)	38 (27.5)	195 (25.3)	374 (20.6)	119 (27.6)	493 (21.9)	531 (21.7)	157 (27.5)	688 (22.8)
Activity at the time of injury									
Traveling on foot	64 (10.1)	10 (7.3)	74 (9.6)	167 (9.2)	42 (9.7)	209 (9.3)	231 (9.4)	52 (9.1)	283 (9.4)
Traveling in vehicle	25 (5.5)	20 (14.5)	55 (7.1)	259 (14.3)	82 (19.0)	341 (15.2)	294 (12.0)	102 (17.9)	396 (13.1)
Collecting wood/food/water	47 (7.4)	9 (6.5)	56 (7.3)	182 (10.0)	46 (10.7)	228 (10.1)	229 (9.3)	55 (9.7)	284 (9.4)
Farming	29 (4.6)	7 (5.1)	36 (4.7)	156 (8.6)	21 (4.9)	177 (7.9)	185 (7.6)	28 (4.9)	213 (7.1)
Tending animals	26 (8.8)	2 (1.5)	58 (7.5)	127 (7.0)	4 (0.9)	131 (5.8)	183 (7.5)	6 (1.1)	189 (6.3)
Playing/Recreation	93 (14.7)	12 (8.7)	105 (13.6)	42 (2.3)	20 (4.6)	62 (2.8)	135 (5.5)	32 (5.6)	167 (5.5)
Tampering with explosive	106 (16.7)	11 (8.0)	117 (15.2)	179 (9.9)	22 (5.1)	201 (8.9)	285 (11.6)	33 (5.8)	318 (10.5)
Passing/standing nearby	130 (20.5)	43 (31.2)	173 (22.4)	443 (24.4)	129 (29.9)	572 (25.4)	573 (23.4)	172 (30.2)	745 (24.7)
Other/Unknown	74 (11.7)	24 (17.4)	98 (12.7)	262 (14.4)	66 (15.3)	328 (14.6)	336 (13.7)	90 (15.8)	426 (14.1)
Victims with amputations									
Upper limb amputations	85 (13.4)	8 (5.8)	93 (12.1)	82 (4.5)	10 (2.3)	92 (4.1)	167 (6.8)	18 (3.2)	185 (6.1)
Lower limb amputations	94 (14.8)	13 (9.4)	107 (13.9)	330 (18.2)	45 (10.4)	375 (16.7)	424 (17.3)	58 (10.2)	482 (16.0)
Injury type									
Death	116 (18.3)	15 (10.9)	131 (17.0)	473 (26.0)	83 (19.2)	556 (24.7)	589 (24.0)	98 (17.2)	687 (22.7)
Upper body injury	219 (34.5)	55 (39.9)	274 (35.5)	437 (24.1)	129 (29.9)	566 (25.2)	656 (26.8)	184 (32.3)	840 (27.8)
Lower body injury	124 (19.6)	30 (21.7)	154 (20.0)	395 (21.7)	95 (22.0)	490 (21.8)	519 (21.2)	125 (21.9)	664 (21.3)
Upper and lower body injury	150 (23.7)	33 (23.9)	183 (23.7)	473 (26.0)	117 (27.1)	590 (26.2)	623 (25.4)	150 (26.3)	773 (25.6)
Unknown	25 (3.9)	5 (3.6)	30 (3.9)	39 (2.2)	8 (1.9)	47 (2.1)	64 (2.6)	13 (2.3)	77 (2.5)

Bilukha © 2007 Prehospital and Disaster Medicine

Table 1—Distribution of injuries due to landmines and unexploded ordnance by age group and gender, Chechnya, 1994–2005 (n = 3,021)*
* Data are presented as number (% of age group), except as noted

in Chechnya in 1998, during its *de facto* independence and before the Second Chechen Campaign, provided a substantially lower population estimate (approximately 0.8 million).[5] Using this estimate as a denominator would have produced higher injury rates. Furthermore, the Chechnya victim database includes only civilian non-combatants whereas victim statistics reported from other countries usually include both military and civilian casualties. If military and guerrilla casualties were included in the analyses, the population injury rates in Chechnya would be even higher. In addition, data presented in this report concern only acute injuries and do not address long-term physical disability and mental health concerns, which may add substantially to economic and public health burdens.

A quarter of all victims of landmines and unexploded ordnance in Chechnya were children. Several previous studies also have reported a high proportion of child casualties.[11–15] In Afghanistan[12] and Eritrea,[13] 46% and 41% of victims, respectively, were children under 16 years of age. A higher proportion of children in Chechnya were injured by unexploded ordnance compared with adults, as was the case in Afghanistan as well as in Bosnia and Herzegovina.[15,16] In Chechnya, 29% of children were injured while playing in a contaminated area or tampering with an explosive device.

	Landmine* n (%)	Unexploded ordnance** n (%)	Unknown n (%)	Total n (%)
Activity at time of injury				
Traveling on foot	174 (61.5)	46 (16.3)	63 (22.3)	283 (9.4)
Traveling in vehicle	201 (50.8)	148 (37.4)	47 (11.9)	396 (13.1)
Collecting wood/food/water	163 (57.4)	80 (28.2)	41 (14.4)	284 (9.4)
Farming	98 (46.0)	53 (24.9)	62 (29.1)	213 (7.1)
Tending animals	104 (55.0)	43 (22.8)	42 (22.2)	189 (6.3)
Playing/Recreation	41 (24.6)	84 (50.3)	42 (25.2)	167 (5.5)
Tampering with explosive	33 (10.4)	229 (72.0)	56 (17.6)	318 (10.5)
Passing/standing nearby	254 (34.1)	278 (37.3)	213 (28.6)	745 (24.7)
Other/Unknown	159 (37.3)	145 (34.0)	122 (28.6)	426 (14.1)
Total	**1,227 (40.6)**	**1,106 (36.6)**	**688 (22.8)**	**3,021**

Table 2—Distribution of victims' risk activity at the time of accident by the type explosive device, Chechnya, 1994–2005 (n = 3,021)
*Including antipersonnel and antitank mines
**Including booby traps

Because unexploded ordnance usually is more visible than landmines, these injuries may be more amenable to prevention through targeted educational messages. A higher proportion of upper limb amputations and upper body injuries among children compared with adults also suggests that children may be more likely than adults to handle explosives.

A high proportion of both children and adults were injured while traveling or performing activities of economic necessity (farming, tending animals, collecting wood, food, or water). As in many other post-conflict settings worldwide, landmines and unexploded ordnance in Chechnya pose a significant threat to the economic recovery process by contaminating arable land, preventing free population movement, and blocking access to vital infrastructure.[3]

Approximately 23% of victims were killed at the scene of the accident. Because victim data collected in Chechnya come from a variety of sources besides health facilities, these data may capture more fatal injuries than data that are purely clinically based. Among victims of landmines and unexploded ordnance reported from health facilities in Afghanistan, the case fatality rate was only 9%, probably a substantial under-estimate because people who die before reaching a health facility are likely to be missed by such a clinically based surveillance system.[12] Interestingly, in Chechnya, the case-fatality rate among children was lower compared to adults, and the case-fatality rate among females was lower compared to males. Reasons for these differences are not well understood and warrant further investigation.

The downward trend in injury rates observed since 2002 may be attributed in part to mine risk education activities implemented by humanitarian organizations and to limited mine clearance conducted by government authorities. Because of persisting security threats, population movement still is limited. As population movement increases in the future, the number of injuries may also increase if comprehensive clearance of contaminated areas is not conducted in a timely fashion.

The results of this study are subject to several important limitations. Although victim surveillance used a standard questionnaire widely used by mine action programs worldwide, the validity and reliability of this instrument have not been formally assessed. Victim data collection was initiated in 2000, meaning a large proportion of all records were collected retrospectively, often several years after the accident occurred. Recall bias may have decreased the accuracy of such retrospective data, although surveillance monitors actively approached and interviewed retrospectively identified victims or their families, thus verifying and, if necessary, correcting the information obtained in an initial report. Because data presented in this paper were self-reported, reporting bias is a potential limitation. Reporting bias may be especially problematic when the victim is killed, and the information on the accident is obtained from the eyewitnesses or from the family of the victim. In addition, a substantial proportion of injuries that occurred prior to 2000 may not have been captured by the surveillance system. Because of security and logistical concerns, victim data collection was limited to casualties who were civilian non-combatants and did not include either military or guerrilla troops who were injured by landmines and unexploded ordinance. This may have significantly underestimated the magnitude of the problem and limited interpretation of the epidemiological patterns and risk factors for injury from landmines and unexploded ordnance. Although efforts were made to collect data on all civilian casualties, it is unlikely that all victims were captured by surveillance, which also would result in under-estimation of the magnitude of the problem.

Conclusions

Results of this study document unprecedented population rates of injury and death from landmines and unexploded ordnance among Chechen civilians, an issue that until recently has gone largely unreported. Many of these deaths and injuries are preventable. The UNICEF, the International Committee of the Red Cross and other humanitarian organizations have developed prevention programs that focus on mine risk education, survivor assistance, and advocacy activities to raise awareness of the problem. It is important that these initiatives continue and are fully supported.

Although injury rates have fallen in recent years, the threat will likely increase as the security situation improves

in Chechnya, allowing more population movement and economic activity. Consequently, identification and marking of dangerous areas, followed by substantial mine clearance efforts, are urgently needed. If troops are withdrawn in the future, it will be critical to clear landmine fields that were originally laid to protect military encampments, checkpoints, and other military objects. Timely, coordinated, and sustained efforts of governmental structures and humanitarian organizations to implement these activities will be critical in preventing further injuries and deaths among civilians in Chechnya.

Acknowledgements
The authors thank the United Nations Children's Fund for providing the data on victims of landmines and unexploded ordnance in Chechnya.

References

1. Centers for Disease Control and Prevention: Landmine-related injuries, 1993–1996. *MMWR* 1997;46:724–726.
2. Giannou C: Antipersonnel mines: facts, fictions, and priorities. *BMJ* 1997;315:1453–1454.
3. Kakar F, Bassani F, Romer CJ, Gunn SW: The consequence of land mines on public health. *Prehospital Disast Med* 1996;11:2–10.
4. International Campaign to Ban Landmines: *Landmine Monitor Report 2005: Toward a Mine-Free World*. Ottawa, Canada: Mine Action Canada, 2005.
5. Aliev T: Census shows rise in Chechnya inhabitants. *The St. Petersburg Times*. 22 October 2002.
6. International Campaign to Ban Landmines: *Landmine Monitor Report 2002: Toward a Mine-Free World*. New York: Human Rights Watch, 2002.
7. International Campaign to Ban Landmines: *Landmine Monitor Report 2003: Toward a Mine-Free World*. New York: Human Rights Watch, 2003.
8. Dolgov R: Landmines in Russia and former Soviet Union: A lethal epidemic. *Medicine and Global Survival* 2001;7:38–42.
9. International Campaign to Ban Landmines: *Landmine Monitor Report 1999: Toward a Mine-Free World*. New York: Human Rights Watch, 1999.
10. United Nations Children's Fund: April 4, 2006: Saving children from the tragedy of landmines. Available at http://www.unicef.org/russia/media_4224.html. Accessed 25 September 2006.
11. Andersson N, da Sousa CP, Paredes S: Social cost of land mines in four countries: Afghanistan, Bosnia, Cambodia, and Mozambique. *BMJ* 1995;311:718–721.
12. Bilukha O, Brennan M, Woodruff B: Death and injury from landmines and unexploded ordnance in Afghanistan. *JAMA* 2003;290:650–653.
13. Hanevik K, Kvale G: Landmine injuries in Eritrea. *BMJ* 2000;321:1189. Is this an abstract or a letter?
14. Jeffrey SJ: Antipersonnel mines: Who are the victims? *J Accid Emerg Med* 1996;13:343–346.
15. Kinra S, Black ME: Landmine related injuries in children of Bosnia and Herzegovina 1991–2000: comparison with adults. *J Epidemiol Community* Health 2003;57:264–265.
16. Bilukha O, Brennan M: Injuries and deaths caused by unexploded ordnance in Afghanistan: Review of surveillance data, 1997–2002. *BMJ* 2005;330:127–128.