



# Wars and kidney patients: a statement by the European Kidney Health Alliance related to the Russian-Ukrainian conflict

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## Introduction

Wars, like other disasters, have a serious impact on the life of all diseased people by destroying infrastructure and interfering with possibilities to gain access to life-saving therapies. Patients are at high risk whether they stay in the affected areas or are displaced elsewhere, which carries the risk of lack of appropriate care, thus resulting in increased morbidity and mortality. Unfortunately, most European health professionals have little experience with the circumstances of war and related threats.

Treatment of patients with either acute or chronic kidney disease (CKD) and kidney failure warrants special attention as survival depends on advanced technology and well-trained personnel. Chronic kidney disease patients are in need of continuous dietary and pharmacologic therapies; hemodialysis necessitates substantial quantities of energy, water and general infrastructure; peritoneal dialysis (PD) cannot be performed without a broad array of therapeutic and auxiliary devices and continuous supply of materials; and, transplant recipients depend on immunosuppressants to avoid rejection. War places a burden on all these requirements, generating a high risk of medical and logistic problems (Table 1) [1, 2].

Furthermore, the destruction caused by wars endangers the environment with frequent fires and the generation of massive amounts of waste and pollution [3], which are another hazard for kidney health. Irradiation due to nuclear plant destruction or nuclear warfare is a cause of kidney

damage. Usage of potentially nephrotoxic medications and blood transfusions, traveling in precarious conditions, and the impossibility to receive therapeutic advice, all affect prognosis adversely. Furthermore, acute kidney injury is a major health threat for both the military and civilians facing war [1, 4].

Similar to other disasters, such as earthquakes and hurricanes, it is likely that kidney patients will tend to displace early in a conflict, as therapeutic resources may soon run out in their familiar surroundings, with deleterious consequences such as management interruptions, missed dialysis sessions and need for hospitalization [5]. A specific burden is imposed on refugees, who are often on the move for several days, cut off from their usual therapeutic resources and follow-up, and who need to find support in unfamiliar surroundings, quite frequently resulting in communication problems as they may be confronted with a foreign culture or language [6].

## The case of the Russian–Ukrainian Conflict

With the outbreak of the hostilities in Ukraine, Europe faces a conflict of unprecedented dimensions not seen since the end of the second World War. In a country with more than 40 million inhabitants and a surface area close to that of Germany and Italy combined, confrontations that cover the entire country have far-reaching consequences for the whole population that must face stressful situations full of uncertainties, threats, and a complete disruption of infrastructure and the socio-economic fabric of everyday life [7].

Many Ukrainian refugees have gone (or are still en route) to Poland and several other bordering countries. The support currently offered by those populations is extraordinary. Yet, as a conflict of this size rarely evolves as expected, local therapeutic infrastructure, like the one near the Polish border, may be overwhelmed.

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**Table 1** Medical and logistic dilemmas faced by kidney patients and kidney health providers during wars [1, 2]

	Medical	Logistic
Non-specific	High risk of medical problems due to unhealthy environment, <sup>a</sup> inadequate and/or inappropriate nutrition and management	Damage to overall and healthcare infrastructure, shortage of medical material and personnel, inability to gain access to life-saving resources / facilities
Kidney disease specific		
AKI patients	Increased incidence due to: gunshot-related bleeding, crush and other injuries, exposure to noxious gases/agents	Shortage of nephrology personnel, medical devices and materials and dialysis possibilities
Pre-Dx. CKD patients	High risk of complications due to interruption in medical treatment and sub-optimal circumstances	Inability to gain access to anti-diabetic, anti-hypertensive, and other kidney disease medications
Dx. patients	Complications due to dialysis inadequacy	Shortage of dialysis personnel and disposables resulting in underdialysis
Tx. recipients	Complications due to interruptions in medications, high risk of infections due to living in unhygienic conditions <sup>a</sup>	Inability to gain access to immunosuppressants and transplant physicians

AKI acute kidney injury, CKD chronic kidney disease, Dx dialysis, Tx transplant

<sup>a</sup>Tents, shelters, metro tunnels

## The nephrologist's perspective

According to the 2019 ERA Registry, there were 10,250 patients on kidney replacement therapies (KRT) in Ukraine; 7,869 on hemodialysis or hemodiafiltration, 922 on peritoneal dialysis and 1,459 transplant recipients (almost all from living donation) [8]. As local units may become incapacitated and an unknown fraction of the 10,250 patients may move elsewhere, nephrologists in Ukraine and in the surrounding countries are very likely experiencing extreme difficulties at this moment because the nephrology community is often more affected by disasters than other medical sectors. Reasons are multifaceted: in addition to health risks to themselves and their families, nephrology professionals are faced with the responsibility of treating high numbers of complicated acute and chronic patients, most of whom necessitate intact general and healthcare infrastructure and highly technological devices. Moreover, to function properly, nephrologists need to collaborate with a broad team of other health personnel (dialysis nurses, engineering and laboratory technicians, dietitians, psychologists) who are vulnerable to the same problems and work overload as the nephrologists themselves. In addition, nephrologists are frequently consulted by other specialists (intensivists, surgeons, trauma and emergency physicians), which considerably increases their workload. Burnout (a psychological response to work-related stress) is common during mass disasters, increasing the drop-out rates of nephrology professionals, which additionally worsens the healthcare burden [9].

## The kidney patient's perspective

Patients are “patients” only during treatments or consultations. The rest of the time they are confronted with the same problems and aspirations as the healthy population. But besides these general worries, patients suffering from chronic conditions and even more so, people with CKD, are among the most vulnerable individuals to suffer from wars. Access to dialysis and to immunosuppressive and other medications is extremely problematic for them since leaving their homes, together with the lack of availability of treatment modalities, can lead to their death.

The kidney patient community requests that the continuity of access to dialysis, transplantation and healthcare is preserved. Uncertainty about the future, powerlessness, fear of death and of the horrors of war, are the greatest concerns of kidney patients at this moment. There is tremendous solidarity among the entire community of kidney patients who are all willing to support their brothers and sisters affected by this terrible tragedy. We strongly demand that governments and medical service providers join forces to ensure treatment for these vulnerable people.

## Solutions

Natural and man-made disasters are unavoidable; ideally, countries at risk should be prepared in advance [10] and the international nephrology community should be ready to offer support to the kidney victims and to the involved-nephrologists [11]. Unfortunately, communities are too often caught off-guard. There is little information on how to cope with immense medical and logistic nephrology problems in war circumstances. Some general principles and potentially useful solutions are summarized below:

1. Countries at risk and their neighboring countries should do as much as possible to prepare for an efficient disaster response [10, 11], and to absorb patient overflow. However, stocking medications or other therapeutic materials is not realistic considering the need to store large amounts of drugs that are at risk of expiring over time, while such anticipatory measures are not possible in case of suddenly erupting conflicts.
2. If no preparatory actions have been undertaken and/or if disaster plans are not available, or have been developed with other circumstances than war in mind, a great deal of resilience is needed by the local as well as the international medical community to cope with the problem [11].
3. In general during mass disasters, and specifically during war circumstances, there is a disparity between health-care demand and supply. Decreasing the demand may be useful to alleviate the extent of the problem. Therefore, reducing the number of dialysis sessions per week combined with diet to reduce toxin, fluid and electrolyte disorders are easy to implement whenever needed.
4. Telemedicine is an option that until now has insufficiently been exploited and would offer the possibility to give therapeutic advice to inexperienced physicians as well as to patients who are unable to travel and who live in remote locations [12]. This option should certainly be utilized as much as possible, but may be hindered by the unavailability of internet, computers or I-phones, computer illiteracy or cyberattacks.
5. Principles in treating disaster kidney victims may differ when compared to routine nephrology practice; therefore, simple and pragmatic recommendations should be considered when treating both acute and chronic kidney patients during disasters [13].
6. Disaster nephrology has been neglected by nephrologists in many countries considering that it is not routine clinical practice [2]. However, applying its principles may be life-saving for acute and chronic kidney patients. Therefore, this critical topic should be included in nephrology teaching and training curricula, as well as in the

scientific programs of international and national annual congresses.

## Conclusion

As this article goes to press, it may still be uncertain how and when the Ukrainian war will end. But even in case of an early peace agreement, the consequences will be felt for long, thus highlighting the need for advanced planning on how to cope with such situations.

The Ukrainian conflict also underlines how vulnerable our current dialysis concept is with its massive need for water, plastic and energy, and we urgently need a shift of mind with more focus on early screening, prevention, and transplantation. The dialysis concept itself has remained unmodified for decades and needs to become more flexible and less dependent on water and fossil fuel energy. A greater focus on home-based systems may be more protective for patients by avoiding having to travel to cities that are usually prime targets in war. The European Union has stressed the need for more resilient and flexible health care systems in disastrous circumstances like COVID-19, but the Ukrainian war underscores that similar concepts must be extended to many other disasters, like floods, tornadoes, landslides, earthquakes, wars and terrorist attacks. The most concerning conclusion is certainly that the human mind is apparently very competent in finding new solutions to harm adversaries once it comes to conflictual situations. We, as a medical community, should be as inventive, when it comes to finding solutions for health. (1490 words).

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## Declarations

**Conflict of interest** None of the authors has a conflict of interest.

**Ethical approval** This article does not contain any studies with human participants or animals performed by any of the authors.

## References

1. Sever MS, Vanholder R, Lameire N (2020) Acute kidney injury in active wars and other man-made disasters. *Semin Nephrol* 40(4):341–353
2. Gibney RT, Sever MS, Vanholder RC (2014) Disaster nephrology: crush injury and beyond. *Kidney Int* 85(5):1049–1057

3. Wimalawansa SA, Wimalawansa SJ (2016) Environmentally induced, occupational diseases with emphasis on chronic kidney disease of multifactorial origin affecting tropical countries. *Ann Occup Environ Med* 28:33
4. Vanholder R, Sever MS, Ereğ E, Lameire N (2000) Acute renal failure related to the crush syndrome: towards an era of seismonephrology? *Nephrol Dial Transplant* 15(10):1517–1521
5. Anderson AH, Cohen AJ, Kutner NG, Kopp JB, Kimmel PL, Muntner P (2009) Missed dialysis sessions and hospitalization in hemodialysis patients after Hurricane Katrina. *Kidney Int* 75(11):1202–1208
6. Van Biesen W, Vanholder R, Vanderhaegen B et al (2016) Renal replacement therapy for refugees with end-stage kidney disease: an international survey of the nephrological community. *Kidney Int Suppl* 6(2):35–41
7. BBC News (2022) Ukraine. <https://www.bbc.com/news/topics/cx1m7zg0gzdt/ukraine>. Accessed 1 Mar 2022.
8. ERA Registry (2022) Annual Report 2019. <https://www.era-online.org/en/registry/publications/annual-reports/>. Accessed 1 Mar 2022.
9. Sever MS, Ortiz A, Maggiore U, Bac-Garcia E, Vanholder R (2021) Mass disasters and burnout in nephrology personnel: from earthquakes and hurricanes to COVID-19 pandemic. *Clin J Am Soc Nephrol* 16(5):829–837
10. Sever MS, Lameire N, Vanholder R (2009) Renal disaster relief: from theory to practice. *Nephrol Dial Transplant* 24(6):1730–1735
11. Vanholder R, Sever MS, De Smet M, Ereğ E, Lameire N (2001) Intervention of the Renal Disaster Relief Task Force in the 1999 Marmara. *Turk Earthq Kidney Int* 59(2):783–791
12. Piza F, Steinman M, Baldisserotto S, Morbeck RA, Silva E (2014) Is there a role for telemedicine in disaster medicine? *Crit Care* 18(6):646
13. Sever MS, Vanholder R (2013) Management of crush victims in mass disasters: highlights from recently published recommendations. *Clin J Am Soc Nephrol* 8(2):328–335

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