



# War in Ukraine: the price of dialysis patients' survival

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On February 24th Ukrainians found out what it's like to be the victims of a full-scale invasion. The refugees who managed to leave the country learned what it's like to never know whether you would see your loved ones again. Our women found out what it's like to choose between motherhood and homeland. Citizens of large Ukrainian cities learned how to pack the bare necessities under the air-raid alarms.

The war has caught Ukrainian citizens off-guard. Even though there were warnings, no one could have really imagined the present hostilities in our homeland and their dramatic evolution. It is terrifying to think of how many Russian mothers will never see their sons again.

Over 150,000 people left Ukraine in the first 3 days of the war. At the time of writing, this number is approaching two million. Over 1000 civilians have already died or have been wounded; among them, there are at many children [1]. Several large cities, such as Kharkiv, Volnovakha, Mariupol, Kherson, Zhytomyr, Irpen, and Bucha have already been semi-destroyed, and their health care networks disrupted.

The consequences of the war are catastrophic for the civilian population and for the Ukrainian health care system. Currently, Ukrainians are left in dire shortage of medicines, food, and provisions, and many basic health care needs cannot be met.

However, one thing that has to be emphasized is the unity of the Ukrainian people. Few nations have ever experienced empathy and solidarity to the extent Ukrainians do now. We hope that this will also contribute to the support to sick and fragile patients. Indeed, every citizen is urged to assist doctors, civilians and soldiers in any possible way. Neighboring countries are taking in refugees at the Ukrainian border. Volunteers are transporting humanitarian aid from all over Europe. Ukrainians who cannot return home are constantly

donating to the people still on Ukrainian soil. Even homeless Ukrainian people managed to contribute [2].

What's coming is horrifying: we are on the brink of a humanitarian disaster. As institutions are exposed to large war risks, some hospitals and kindergartens have been moved below ground and are now located in bomb shelters.

However, due to their complex technical needs, the same cannot, unfortunately, be applied to dialysis clinics, thus creating additional problems. In conditions of martial law, constant bombing, curfew and limited health resources, hemodialysis patients are one of the most vulnerable populations. As of January 1, 2021, 11,181 patients (268 per million) have received kidney replacement therapy (KRT) in Ukraine, including 6,017 by hemodialysis, 2700 by hemodiafiltration, 931 by peritoneal dialysis, and 1533 who have undergone kidney transplants [3]. It should be noted that as a result of the implementation of health care reform, the number of hemodialysis patients and patients with a kidney graft has significantly increased over the last year (2021–2022). During the above-mentioned time, a registry of kidney transplant recipients has been successfully set-up, and more than 300 kidney transplants from cadaver donors have been performed. Before the war, all patients on KRT were provided with immunosuppressants, erythropoietin, iron supplements, and phosphate binders. Patients with end-stage kidney disease had the opportunity to choose the modality of KRT and the dialysis center.

Now the situation has catastrophically changed. The main problem today is the difficulty in the delivery of consumables for hemodialysis, as well as the inability of the patients and medical staff to reach the dialysis center due to rocket attacks, bombing, and active hostilities on the ground. The lack of logistics, as a result of the war, has rapidly deprived our hemodialysis and kidney transplant patients of the

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**Fig. 1** Make art not war, French street artists for Ukrainian people (courtesy of the author). Editor's note: the original images of the manifestations against war on February 28 in Madrid, Berlin and Washington had to be removed due to the difficulty of getting timely permissions; however, they remain available on the web. The motto make art not war, increasingly used since the Iraq war, was inspired by popular 1960s anti-war mantra "Make love, not war", underlining the need for creative rather than destructive acts, and the hope that time will come to share art again

necessary medical and pharmaceutical support. Dozens of patients cannot get to their dialysis centers on time and have not received hemodialysis treatment for more than a week.

Nevertheless, the entire nephrology community of Ukraine is united. Risking their lives, our nephrologists and nurses do their best to provide at least minimally adequate hemodialysis treatment to patients in need. First, we have created a shared database on the availability of dialysis locations in different regions of Ukraine and on the movement of patients, which is constantly updated. Each patient should be able to receive hemodialysis treatment in settlements along the evacuation route. Unfortunately, due to the realities of war and current lack of an agreement regarding humanitarian corridors, none of the civilians, including CKD patients, have priority for evacuation.

Second, we have developed recommendations for the organization of treatment of hemodialysis patients. The recommendations are nothing more than instructions for

conducting hemodialysis in extreme conditions (collaboration with the local military administrations, disinfection of hemodialysis machines in water-saving circumstances and lack of time, emergency shutdown of patients during air raid alerts, and options for isolating COVID-19 infected patients, among others).

In these difficult days, we have received a huge number of offers from several countries to treat and support our hemodialysis patients, and, fortunately, many of our patients are now safe and can continue their treatment in Poland, Germany, Italy and other countries. Ukraine is extremely grateful for the support provided and I would especially like to thank the organizations for facilitating and speeding up border crossings into Poland for patients requiring dialysis.

Our prayers are with the mothers, awaiting their sons from the border. We stand together. We stand for our patients (Fig. 1).

## Declarations

**Conflict of interest** The author declares no commercial or financial conflict of interest.

**Ethics approval** The author confirms being the sole contributor to this work and has approved it for publication.

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