



Life-Saving Care for Patients with End-Stage Kidney Disease during the War in Ukraine 2022

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5 The health and survival of patients living with end stage kidney disease (ESKD) have been threatened by
6 the ongoing conflict in Ukraine. Commencing February 24, 2022, the Russian invasion scaled up to
7 become the largest and most ferocious military assault in Europe since World War 2. The war triggered
8 forced migration, leading to the displacement of more than 13.3 million Ukrainians, equivalent to 32% of
9 the nation's 44.1 million citizens. This figure included 5.6 million refugees¹ who fled to European nations
10 and 7.7 million internally displaced persons² inside Ukraine as of May 3, 2022. Estimates from Ukrainian
11 officials place future refugee numbers—persons living outside Ukraine—in the range of 10 million.
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18 **Risks for kidney patients in wartime**

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20 Ukraine's medically vulnerable patients, persons living with disabling medical conditions that require
21 specialized care and customized approaches to safeguarding them from harm, have been
22 incommensurately affected by the war.³ Among these are more than 11,000 patients who receive
23 kidney replacement therapy (KRT). More than 1,500 have received kidney transplants, 6,000 depend
24 upon hemodialysis, 2,700 receive hemodiafiltration, and almost 1,000 receive peritoneal dialysis (PD).⁴
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30 In peacetime, optimizing the health of patients on KRT requires frequent laboratory monitoring,
31 provision of immunosuppressants, care for vascular or PD access, management of anemia with
32 erythropoiesis stimulating agents, and iron supplementation and care of mineral bone disease.⁵ In
33 consultation with their nephrologists, patients select the most appropriate form of KRT and identify
34 accessible dialysis centers in their communities. However, in the context of ongoing hostilities, the
35 reliance of these patients on multiple weekly visits to a hemodialysis center jeopardizes their survival.
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42 In addition to Russia's bombardment of civilian residences and neighborhoods, leading to mass
43 displacement, the World Health Organization's Surveillance System for Attacks on Health Care
44 enumerated 186 attacks on health facilities—including dialysis centers—and on their patients,
45 healthcare personnel, ambulances, and medical warehouses stocking PD supplies through May 3, 2022.⁶
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50 **Dangers faced by Ukrainian patients receiving KRT**

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52 The safety and clinical disposition of Ukrainian patients receiving KRT vary by geographic region amid
53 the dynamically changing conflict. First, some patients live in portions of Eastern Ukraine that were
54 seized at the outset of the war and came under Russian control; unfortunately, these patients' access to
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3 kidney care and vital supplies cannot be controlled by the Ukrainian healthcare system. Second, other
4 patients live in communities experiencing heavy bombardment and disruption of infrastructure, while
5 lacking reliable humanitarian corridors for evacuation. In Mariupol, Volnovakha, Chernihiv, Bucha, Irpin,
6 and many other cities and towns under siege, patients were cut off from hemodialysis services while
7 experiencing power outages during bitterly cold weather, severe food shortages, and lack of one of the
8 most essential necessities for kidney patients—ample supplies of clean water. The devastating
9 bombardment of Mariupol deprived hemodialysis patients from accessing their clinics; one patient who
10 successfully evacuated Mariupol reported that 49 of 50 patients at his center had died.

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13 Third, some patients requiring KRT are among the 7.7 million internally displaced persons who
14 evacuated their home communities but still reside inside Ukraine. Numerous dialysis centers were
15 deployed in areas that were less frequently under attack to provide free hemodialysis services.
16 Courageous nephrologists and staff remained in their clinics, sometimes moving dialysis equipment into
17 basements, to continue treating their patients. Austere living conditions experienced by displaced
18 patients on KRT, some of whom were actually living in the dialysis centers, prompted some patients to
19 return to liberated home communities or travel abroad.

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22 Fourth, fortunately, patients receiving KRT have been prioritized for immigration into European Union
23 (EU) countries, including Poland, Romania, Slovakia, France, Germany, Italy, and the Republic of
24 Moldova where they were able to resume regular hemodialysis treatments.⁷

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27 Fifth, medical trauma sustained by civilians during bombardment, and military personnel engaged in
28 battle, is creating a growing cohort of individuals who will require dialysis or transplant due to war-
29 related acute kidney injury.⁵

24 25 26 **Support for Ukrainian patients on KRT inside Ukraine and evacuated to Europe**

27 During the first two months of the war, an unknown number of Ukrainian patients receiving KRT were
28 able to reach the relative safety of western Ukraine and neighboring EU countries. The receiving
29 countries have generously supported special needs patients. For example, Poland, the nation that has
30 received 3.1 million Ukrainian citizens,¹ announced that refugees requiring medical support would be
31 treated in accordance with the rules that apply to its own citizens. For example, costs for dialysis
32 services for Polish citizens are reimbursed by the Polish National Health Fund; this funding was extended

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3 to cover Ukrainian refugees on KRT who require dialysis. Poland also provides COVID-19 vaccination to
4 refugees upon entry.
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8 International organizations providing kidney care services with an established presence in Europe have
9 been instrumental in providing dialysis services for Ukrainian refugees requiring KRT as they arrive in EU
10 countries. These private providers have been handling about two-thirds of refugee patients receiving
11 KRT and the public sector has signaled its willingness to further assist these patients. As of mid-April,
12 kidney care providers estimated that about 200 Ukrainian kidney patients on KRT were receiving regular
13 dialysis treatments in Poland.
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20 In addition to providing direct dialysis services for Ukrainian refugees in receiving countries,
21 international organizations providing kidney care services have shipped supplies to dialysis centers that
22 are still operating inside Ukraine. For example, one private dialysis service provided sufficient materials
23 for 6,000 treatments to clinics in Lviv and Rivne.
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28 More broadly, The European Kidney Health Alliance drafted an open letter regarding what the world
29 nephrology community can do to protect Ukrainian patients on KRT including: providing reliable life-
30 saving therapies, rapidly training relevant healthcare professionals, enhancing telemedicine capabilities,
31 assuring free access to care in refugee-receiving countries, and facilitating air transport.⁸
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36 **Superimposed risks from COVID-19**

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38 For patients on KRT currently living in war-torn communities inside Ukraine, or attempting a life-saving
39 migratory journey to a border nation, overt threats to health and life are vividly evident. Less outwardly
40 visible are the ubiquitous risks posed by the ongoing COVID-19 pandemic.
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45 First, persons living with chronic kidney disease who receive KRT are at elevated risk for COVID-19
46 infection and progression to severe or fatal disease.⁹ Second, COVID-19 rates in Ukraine were
47 moderately high when the war began, and the highly transmissible Omicron variant (and extremely
48 infectious BA.2 Omicron sub-lineage) was predominating throughout the first months of the war. Third,
49 COVID-19 vaccination rates in Ukraine were extremely low. Less than 35% of the population had
50 received the 2-dose regimen, while only 1.6% had received a “booster” dose that is much more
51 protective against severe disease caused by Omicron. Fourth, behavioral mitigation strategies, including
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3 wearing masks, physically distancing, and limiting the size of gatherings, were unfeasible during the
4 conflict. Fifth, individuals on KRT shared bomb shelters during air raids, packed trains while evacuating,
5 and jammed reception centers when arriving in receiving countries. In all instances, these patients could
6 not avoid sharing the airspace and the respiratory aerosols produced by those around them, thereby
7 elevating their risks for contracting COVID-19.
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11 12 13 **Mental health considerations**

14 For persons living with chronic kidney disease, mental health impacts are multi-layered. First, patients
15 receiving KRT grapple daily with their medical condition. Lifestyles are transformed and revolve around
16 the imperative to receive dialysis or immunosuppressant therapies multiple times weekly. Psychosocial
17 stressors associated with their diagnosis, the rigors of treatment, and shortened life expectancy, exert a
18 toll on mental wellness. Being diagnosed with chronic kidney diseases increases the incidence of
19 common mental disorders, most notably major depression, anxiety disorders, and posttraumatic stress
20 disorder.
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28 Second, the COVID-19 pandemic produced a global upsurge in the prevalence of mental disorders. With
29 baseline rates of psychopathology elevated worldwide due to COVID-19, the add-on stressors of living
30 with chronic kidney diseases are more likely to significantly impair function.¹⁰
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35 Third, the inescapable exposures to the hazards of war, and the constancy of being under attack, amplify
36 the intensity of the life stressors just described—living with chronic kidney disease during the COVID-19
37 pandemic. The entire population of Ukraine has experienced repetitive, potentially traumatizing
38 exposures to the horrors of war. Many Ukrainian citizens have experienced direct threats to their own
39 lives, physical injury during the bombardment, or loss of a loved one. Displacement from home and
40 community, experienced by more than 3 of 10 Ukrainians, is associated with compounding losses of
41 property, possessions, identity, and social support.
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48 One other element of the Russian assault is riveting in its psychological power and significance: these
49 continuing deadly fusillades are perpetrated acts of mass violence.
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53 In conclusion, Ukrainian citizens living with end-stage kidney disease, are challenged in their abilities to
54 cope simultaneously with their diagnosis, the pandemic, and the war. They are attempting to do so
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3 while access to their life-saving treatments, care providers, and support networks are disrupted.

4 Nonetheless, all Ukrainians, including nephrologists and their patients, stand together with their army,
5 fearlessly fighting for the independence of Ukraine. Among them, there are many volunteers, including
6 those traveling abroad for the sole purpose of getting a kidney transplant and returning to the front.
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9 Ukrainian nephrologists endure the cruel war with, and for, their patients.
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