НИРКИ KIDNEYS

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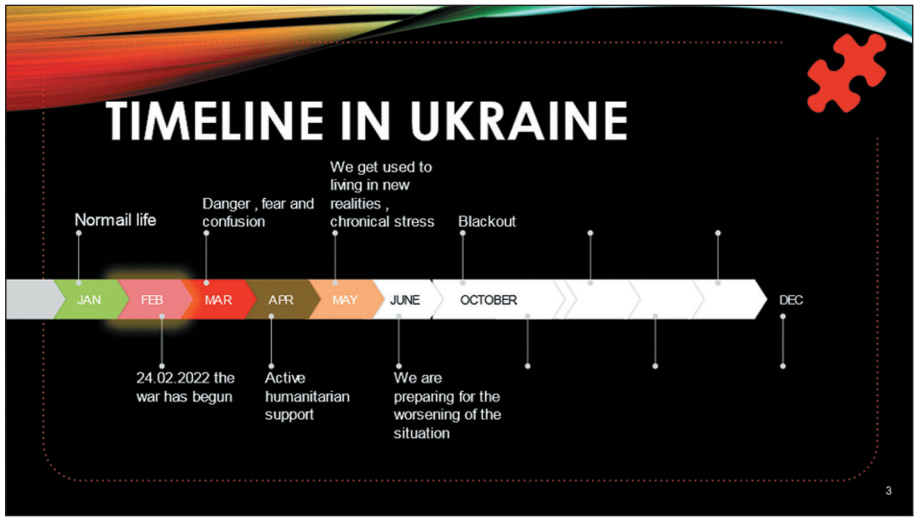
Доповідь професора Д. Іванова на KfH-Symposium Nephrologie & Rezertifizierung für Hypertensiologeninnen DHL® 19 (November, 2022, online-seminar)

Dear colleagues, I am immensely grateful for the invitation and the opportunity to speak at the nephrology symposium.



This slide presents the history of the development of the military situation in Ukraine. The war began on February 24 and is now continuing for over 8 months. Three-time intervals should be singled out, which significantly changed the possibilities of renal replacement therapy. The first stage — was the beginning of hostilities, which entailed all the existing changes. At first, there was confusion, and many people began to leave the country. In Kyiv the largest city children's hospital was closed as well as private hemodialysis centers, and the number of all working in the city staff decreased by 70 %. The supply of medicines stopped, and the logistics chains of medical care were broken. The second period is characterized by renewing medical care, and the third one which is going now, is the total limitation of electricity, which was the reason for the repeated restriction of renal replacement therapy. So, we have a 3 months recovery period between these two negative periods. Then humanitarian support has been initiated from march, and at that time we began to get used to the war.

The first period of war is presented here using SWOT. SWOT analysis of the management situation in Ukraine shows that almost all non-state dialysis care has stopped working in Kyiv in

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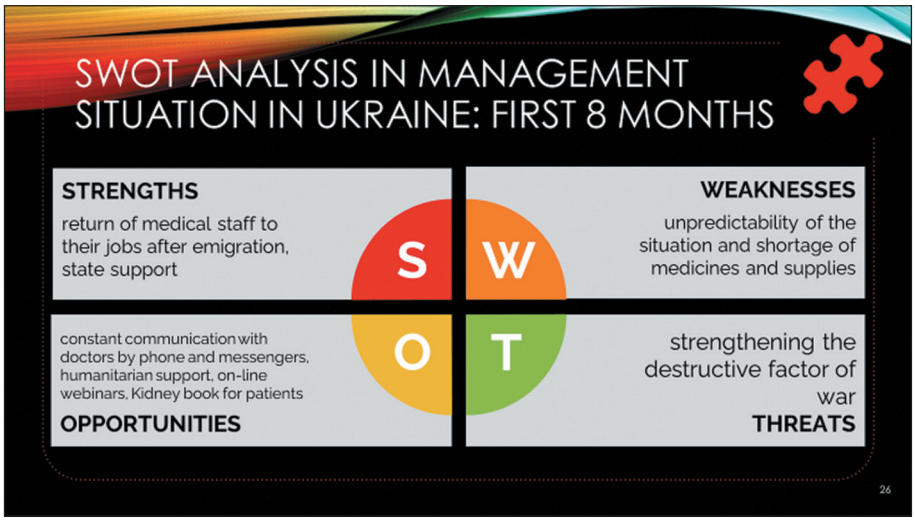
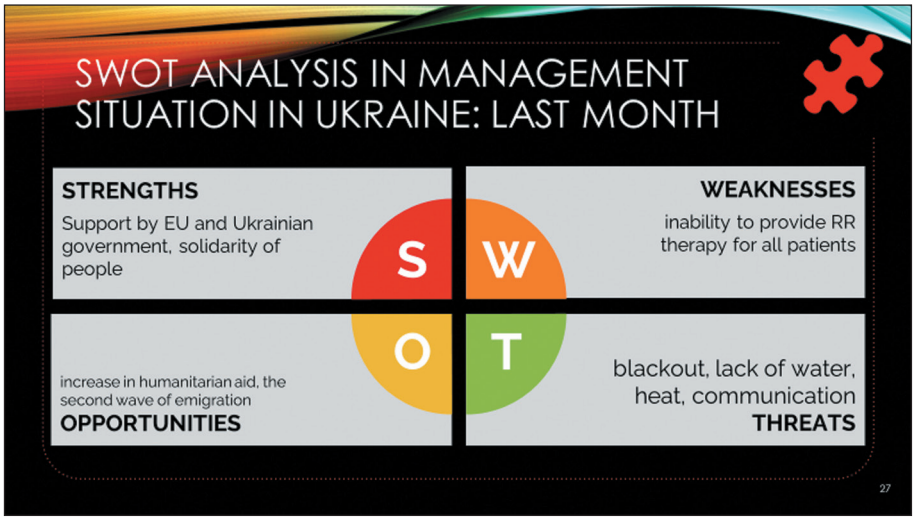
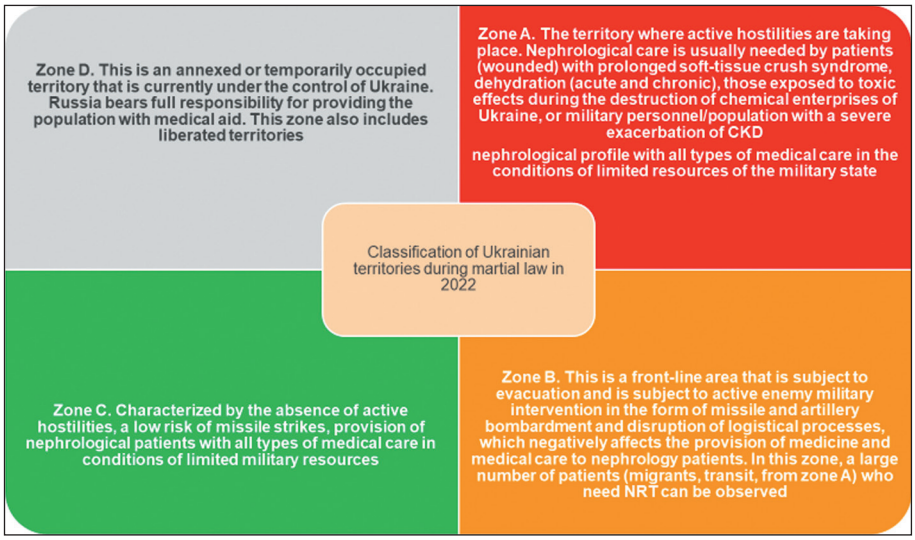
the first month. Thus, the first conclusion about the availability of RRT at the beginning of the war is as follows. Public renal replacement therapy has remained a more reliable source of care than private structures. Employees of private facilities were frightened by the war, they left the city, and there was no one to work. In state units and departments, there was also an outflow of medical workers, but not to the same extent. That is an interesting observation. The patients were confused. We arranged for them to move to the city's dialysis centre and my clinic, gave them a Kidney book on self-care, and organized online consultations and medical help. Movement around the city and some areas was practically stopped due to the bombing. And the second conclusion. Be prepared to move patients to other departments nearby, be prepared to go to individual patients with dialysis machines, have a double supply of dialysis and immunosuppressive therapy consumables to quickly respond to a changed situation, and be ready to attract health workers to replace those who have left their working places.







During the period of belligerence, we have divided the entire Ukrainian territory into 4 zones from the red zone, where active clashes are taking place and there are civilians, to the green zone, where there have been no hostilities, but this zone takes on refugees from the red zone. The allocation of these 4 zones, in our opinion, is very important, as it allows us to understand the logistics of organizing patient care. The greatest load falls on the red zone, where it is extremely difficult to continue dialysis. It is carried out in bomb shelters, and basements, it is difficult for patients to get to the dialysis centre, they stay there overnight and, sometimes, live there. Where there is war, there is a nightmare. People do not receive dialysis, hide in basements, die from underdialysis, exacerbations of chronic processes, primarily CKD 4–5. The red zone is also characterized by an increase in the number of patients, both military and civilian, with acute kidney injury. This also places an additional burden on dialysis departments.

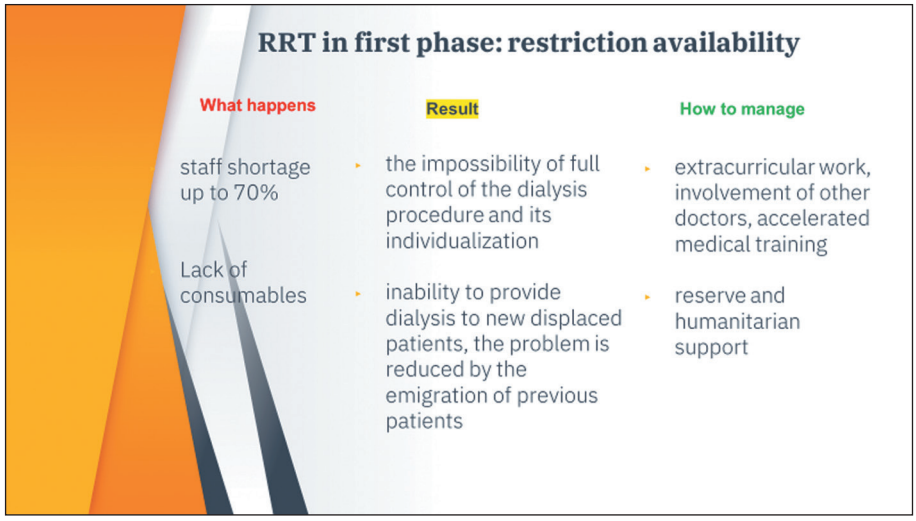
The third zone is green. It is under a heavy burden in helping refugees, the number of patients has increased, and consumables are needed in greater quantities. And everywhere there is a problem of personnel: no one wants to work in the areas subjected to bombing,

and in the areas where it is calm, they work in 3–4 work shifts. So, currently, there are 2 principal zones in Ukraine: where it is calm and where there are active hostilities. In quiet areas, departments work there, the number of patients is restored and people arrive from internal evacuation zones, the number of personnel is increasing. But there is a violation of the logistics chains for the supply of medicines and supplies.

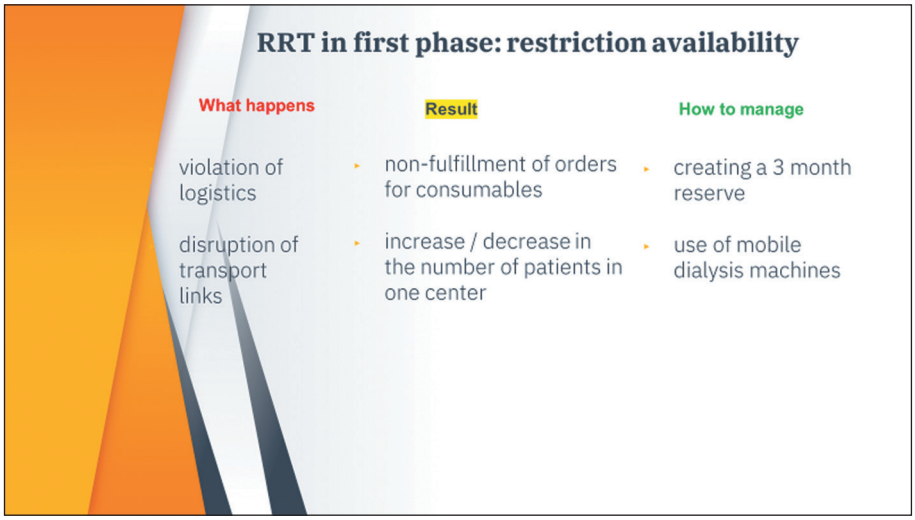
Let's look at a specific example of the impact of the first active phase of the war on the provision of renal replacement therapy. From official sources it is known that the front line is more than 1000 km, the number of the military is about 150 thousand from Russia, and the number of people in Ukraine is just over 10 thousand patients. In the first month of the war, about 15 % of patients emigrated. The number of medical staff has decreased by 30–70 % depending on the region. Here you can see the number of dialysis patients in the country. Almost all children from Kyiv were evacuated to Western Ukraine and abroad, of the adult patients who remained in Kyiv, we performed 2-time dialysis instead of 3 times a week. In the first 2 months, the reduction in the number of dialysis procedures did not affect mortality. But the number of patients with hypertension increased by about 30 %, perhaps stress was the cause. According to unofficial data, the mortality rate increased up to 10 %. Conclusion: the disproportion between the remaining number of patients and the reduced number of personnel in the phase of active hostilities requires the preservation of medical personnel.

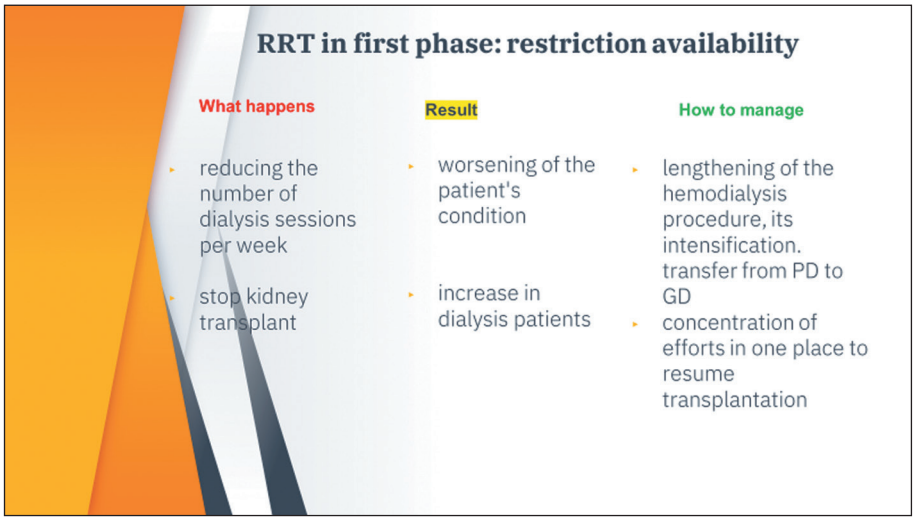
The total number of children has halved in the two first months of the war. To date, two-thirds of them have returned to Ukraine. Approximately 30 % moved to safer regions. This process of displacement within Ukraine continues even now, it is determined by the map of the activity of the war. The children's population and children's patients turned out to be more mobile in emigration, a relatively large part of the children remained outside the country in comparison with adults. There was no acute shortage of medical personnel for children. Perhaps paediatricians are more responsible. Conclusion: for children with kidney disease, the situation is more stable, and control of consumables for dialysis is required.

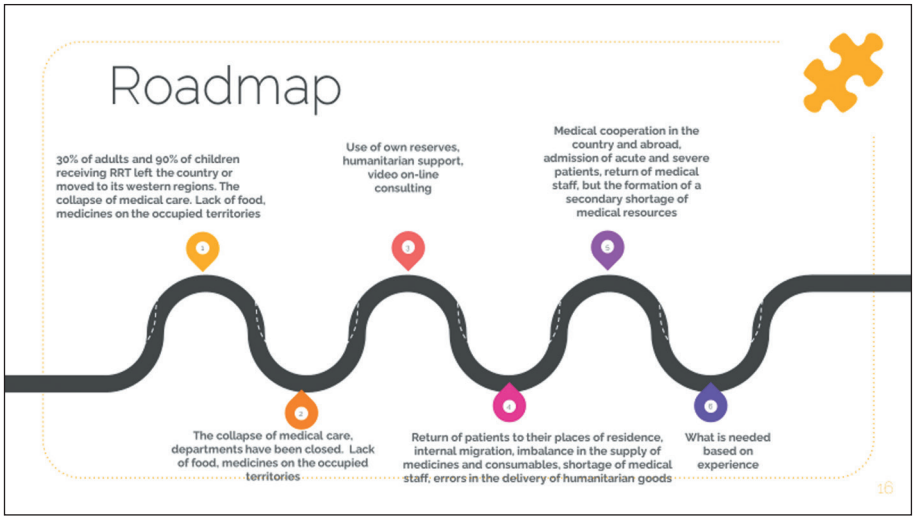
The first humanitarian aid to the central and eastern regions of Ukraine, to Kyiv began to arrive 3 weeks after the



start of the war. Here you see those countries that offered their assistance first and most actively and significantly. As you can see, among 4 the most active persons who support us with medicines and humanism were Profs Hermann Pavenstaedt, Lutz Veber, Lars Pepe, and Jun Oh from Germany, Prof Olena Levtchenko from Belgium. Many thanks to them from our people and personally from me.







On these slides are our heroes who have shown humanity, a sincere desire to help, and organized effective assistance. First of all, these are consumables for dialysis, which allowed us to return to 3 single dialyses per week after 1.5 months, antihypertensive drugs and immunosuppressants for people with a transplanted kidney and glomerulonephritis. Based on the experience gained and the resumption of domestic supplies, and already received humanitarian aid, we can outline what we need for the central region and Kyiv. These are mobile dialysis machines, immunobiological therapy for patients with systemic lupus erythematosus, rheumatological patients, immunosuppressants and immunohistochemical stains to continue performing nephrobiopsies.

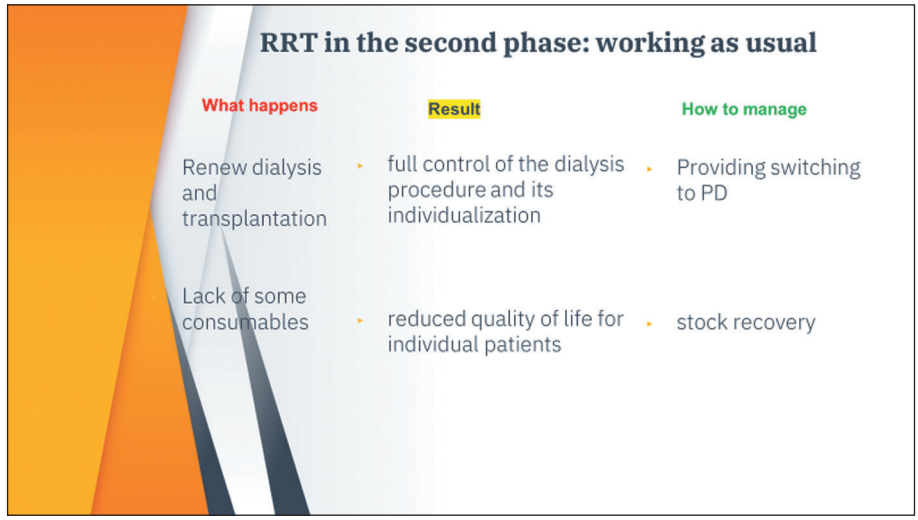
The situation in the western regions of Ukraine is much better and safer. And we would also ask for short internships online or on-site to improve the knowledge of new doctors who have replaced those who left, as well as to improve their skills. And one more note. Humanitarian aid is better, faster and more reliable when it is framed from hand to hand, i.e. indicating a specific person or hospital, not large help, but regular is better.

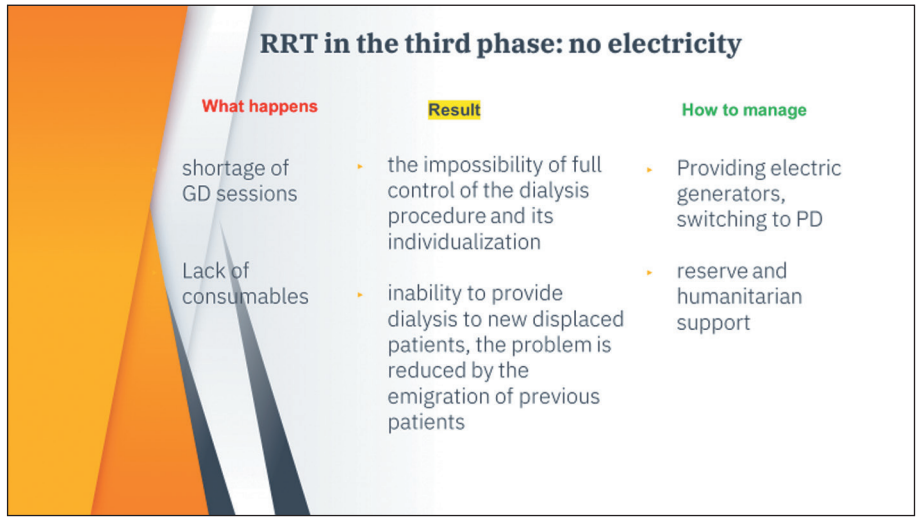
Now let's try to systematize all of the above. The first three months of hostilities are characterized by limited opportunities for renal replacement therapy. There is a dramatic decrease in the number of healthcare workers, in direct proportion to the decrease of the population. This leads to a limitation of the completeness and quality of renal replacement therapy. Secondly, there is a shortage of supplies, which makes it difficult to provide assistance to the remaining patients and those who have arrived through internal migration. The result of these processes requires the creation of a reserve of medical personnel, optimization of the work of the remaining personnel, the involvement of medical personnel from other sources, and the accumulation of a reserve of consumables for dialysis, medicines, mobile dialysis machines and immunosuppressants.

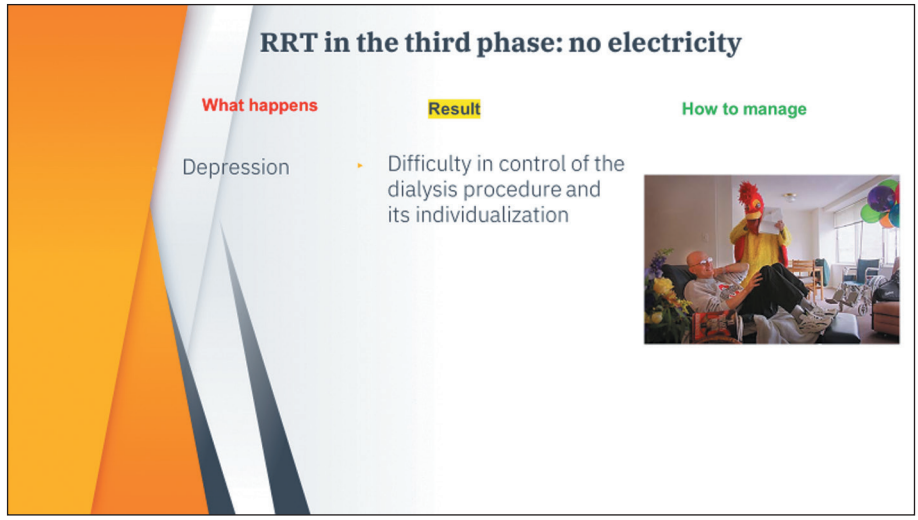
The next problem is the violation of logistic chains for the sup-

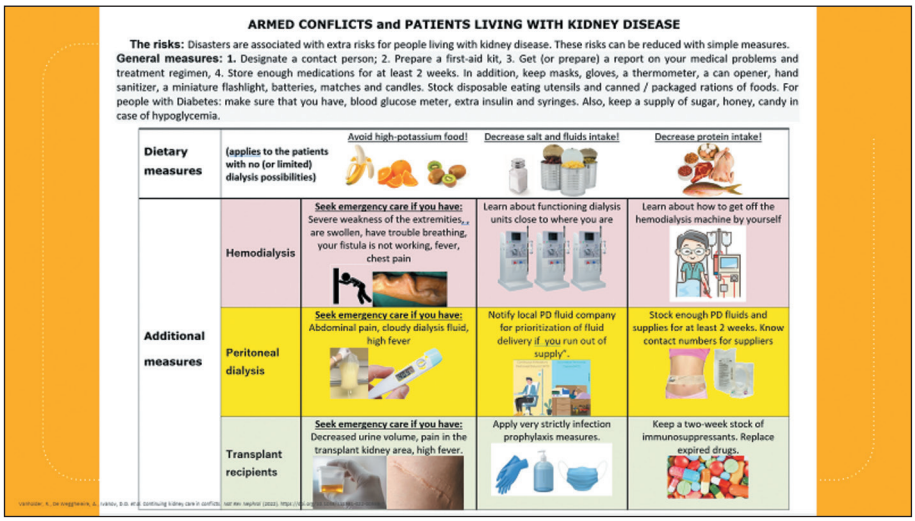
ply of necessary consumables and medicines. We are faced with a paradoxical situation. On the one hand, a number of pharmaceutical companies simply distributed medicines, including very expensive ones, in order to free their warehouses and help the population. On the other hand, some warehouses for medicines were closed and many of them, finally, were simply destroyed. As a result, there is an imbalance between need and consumption in the direction, as a rule, of a shortage of consumables and medicines. Disruption of transport chains, passenger traffic, subway stops, and road travel difficulties due to numerous checkpoints and military controls worsened the delivery of both treatment products and the availability for patients to arrive at dialysis centres, receive medicines for maintenance treatment, and perform the necessary tests. How to solve such problems? We consider it necessary to have a 3-month supply of consumables and medicines, additional dialysis units or machines, additional transport in medical facilities, fuel for cars, food and water for patients and stuff. Very important is the availability of equipped bomb shelters, in which it would be possible to carry out procedures, stay overnight or live for short periods of time for both patients and medical personnel. At the same time, it is extremely important to have sources of communication with the outside world, family, and employees through mobile communications, instant messengers and the Internet.

An extremely important outcome of all these restrictions is the deterioration in the provision of medical care to patients, namely: a decrease in the number of dialysis procedures from 3 to 2 per week, a decrease in the number of fillings during peritoneal dialysis, an increase in complications during the course of the disease, and an increase in the number of graft rejections. Moreover, due to the practical stoppage of kidney transplantation in the red zone and its decrease even in relatively prosperous zones, the number of people requiring dialysis care has artificially increased. How are these issues resolved? In hemodialysis — by increasing the duration of the procedure or intensifying it using extended dialysis, hemodiafiltration, selecting patients with preserved residual kidney function for 2-day dialysis, transferring from hemodialysis to peritoneal dialysis or vice versa, depending on the technical conditions, creating a reserve of dialysis machines and cyclers for peritoneal dialysis. It is important to maintain the place of transplantation whenever









possible and increase transplantation activity in relatively safe areas. It is also important to create a reserve of iron medicines and erythropoietin, the number of which has increased significantly in patients due to malnutrition, stress and underdialysis.

The next slide shows our experience during the war. We now better understand the processes of providing assistance during periods of active hostilities and a period of calm, and we can effectively help on territories under occupation and free territories. We understand, unfortunately, that the process is likely to extend for many months, and there may be many more surprises.

The second phase is characterized by the restoration of the work of dialysis departments, and the restoration of the supply of medicines, primarily through humanitarian assistance. This made it possible to restore dialysis procedures and return to the usual rhythm of work. Most of the staff returned to their places, private dialysis centres were restored, and transplants resumed. At the same time, there is still a shortage of individual consumables and medicines, but, on the contrary, some of them even have surpluses. Most of the patients returned to their places of dwelling, and internal and external emigration decreased. But there were problems with chronic diseases, which were paid less attention to during active military events. In general, the restoration of work had a positive effect on the condition of patients and we can say that we have practically returned to the pre-war period level.

And now, even with military successes, we have entered the third unfavourable phase — a drastic disruption of the continuous supply of electricity. According to official data, about 35 % of energy supply capacities have been destroyed. Electricity is out for intervals of 4–8 hours, and the power blackout schedule is subject to emergency adjustments and, therefore, is not always followed, which requires generators and fuel to keep dialysis machines running. In fact, the problems of the first stage of the war were repeated, namely: a reduction in the number of dialysis procedures, and a decrease in their effectiveness. The positive fact is that stocks of consumables and medicines have been created, and medical personnel are being retained, but the possibilities for carrying out full-fledged procedures have been lost. There are interruptions in the supply of water, not everywhere heating is supplied, and not everywhere there is enough fuel for electricity generators. Again, there is an imbalance in the number of patients between dialysis centres, transplantation activity is decreasing. These issues are resolved by providing uninterrupted sources of energy, supplies of medicines, food and water. I would like to note that the state takes care of such patients, providing uninterrupted, if possible, power supply for hospitals and dialysis centers, at least in Kyiv.

Depression and war weariness remain very important issues. It is typical for both patients and medical staff. The desire and motivation of patients to continue treatment are decreasing, the attention and care of medical personnel are decreasing too, there is tension in society, and family members of many people are at the front or have already been injured or died. How to deal with depression? On this slide, one of the ways is illustrated.

All these approaches to assessing situations and the analysis of our experience are summarized, evaluated and embodied in recommendations for patients and doctors. Such documents become open to doctors, the purpose of this work is to improve the quality of care for our patients, to draw conclusions from the experience and mistakes, the desire to create the most convenient and effective methods of providing medical care during military operations.

Dear colleagues, Thank you again for giving me the opportunity to share our concerns. Please write down my contact details, I will be happy to answer your questions in person. ■