

# Practicing Medicine in Wartime Ukraine

A Conversation Between Yaroslav Kmetyuk, Johannes Czernin, and Ken Herrmann

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**J**ohannes Czernin, editor in chief of *The Journal of Nuclear Medicine*, and Ken Herrmann, a professor of nuclear medicine at the Universitätsklinikum Essen (Germany), talked with Yaroslav Kmetyuk, head of the All-Ukrainian Radiosurgery Center at the “Feofaniya” Hospital in Kyiv, Ukraine, about challenges in medical practice during the ongoing war. Dr. Kmetyuk received his medical education at Ivano-Frankivsk State Medical Academy (Ivano-Frankivsk, Ukraine), where he subsequently interned in radiology. At the P.L. Shupnik National Medical Academy of Postgraduate Education (Kyiv, Ukraine), he specialized in nuclear medicine. He completed additional nuclear medicine training at University Hospital Freiburg (Germany). Since 2008 he has been at the Clinical Hospital “Feofaniya,” where he created the first PET/CT center in Ukraine, including staffing, quality assurance programs, and radiopharmacy production. His current oversight includes both radiation oncology and nuclear medicine. The following conversation took place on May 24, 2022.

**Dr. Czernin:** *The Russian invasion of the independent Ukraine began on February 24, 2022, in the middle of your regular work schedule. What was this like as a practicing physician? How did you adapt to the constant shelling and bombing and continue to support your patients?*

**Dr. Kmetyuk:** On February 24 I woke up to the sound of missiles and helicopters. It took half an hour to get my family and belongings together, and we went to the hospital, where I would spend the next 1.5 months.

**Dr. Herrmann:** *With your family?*

**Dr. Kmetyuk:** No. My family stayed for 2 very long nights in the hospital, and then I managed to send them to western Ukraine.

**Dr. Herrmann:** *Where did you send them? It must have been difficult to find a place.*

**Dr. Kmetyuk:** Actually, I grew up in the western part of Ukraine, close to Lviv, and I graduated from medical school there. My parents still live there, so when I had the opportunity to put my family on a special emigration bus, I sent them. They spent a few weeks with my parents and then went on to Poland. In May, however, they came back from Poland—back to Ukraine.

**Dr. Czernin:** *Are they still in western Ukraine?*

**Dr. Kmetyuk:** Yes, in the western part of Ukraine it feels much safer, and there are fewer air and bomb alerts.

**Dr. Czernin:** *How were you able to continue to work while all of this was going on? I understand that you were living in the hospital basement and maintaining a regular clinic schedule for as*

*many patients as possible. You never stopped patient care, did you?*

**Dr. Kmetyuk:** We never stopped radiation therapy, because it’s not good to stop at half of the planned dose. Many patients were still in Kyiv without the ability to evacuate to a safer place. I had a minimal staff for providing radiation therapy. During most of March we had to discontinue nuclear medicine services, but by the end of March we resumed work, including both radiopharmacy production and clinical service.

**Dr. Herrmann:** *In previous communications you noted that you and your radiation oncology and nuclear medicine staff moved into the hospital. How many people joined you living in the hospital?*

**Dr. Kmetyuk:** For approximately 1.5 months 15–20 people lived with me in the basement. It was just enough staff to provide full-time radiation therapy. And we were able to bring back the diagnostics within a month.

**Dr. Herrmann:** *Can you tell us a little more about life in the basement with your team? Did you have enough food? You were (and continue to be) facing an extremely serious and changing situation every day.*

**Dr. Kmetyuk:** I work in a public clinic. “Feofaniya” is a multidisciplinary hospital, with many departments. Most of the staff from other departments lived and worked here as well, providing care for patients and for injured civilians and soldiers. The nuclear medicine department was also involved, because the CT scanners in the radiology department could not meet the needs of all those injured people. We used the PET/CT scanners for CT trauma imaging. Most of the surgeons and physicians lived here in the hospital so as not to waste time in dangerous commuting. It was impossible to move around old Kyiv, especially in the first weeks, when the street fighting took place. You probably saw on TV the blown-up tanks and military equipment on the streets. Some of our workers came under fire in the street. They are all alive, and no one was seriously injured. It was much smarter to live in the hospital, which has good shelters in the basement. And we were needed here: we not only participated in medical care but also provided social and humanitarian aid. Personnel brought food to the hospital, and we had enough to survive.

**Dr. Czernin:** *How many medical and technical staff in all were living in the hospital at the peak of this crisis period?*

**Dr. Kmetyuk:** I think around 350 people lived in the hospital.

**Dr. Czernin:** *Did in-patient service also continue? Was the hospital fully occupied with patients?*



Yaroslav Kmetyuk,  
MD, PhD

**Dr. Kmetyuk:** All patients who could be safely checked out of the hospital were discharged during the first days. Patients who needed continuing care stayed in the hospital. The biggest challenge was that air raid alerts were sounding all the time, and we could hear the constant shelling and bombing. It was difficult, because when this happened, all patients had to be moved to the basement. This was especially challenging for the resuscitation team, who had to transport all patients on artificial ventilation and oxygen.

**Dr. Herrmann:** *You were extremely busy. Did you even have time to worry? How do you function under these conditions? How do you handle this kind of stress and pressure?*

**Dr. Kmetyuk:** It's much easier not to go crazy when you are very busy. Even when we are not with patients, we try to do something useful, even if it's only to move furniture to protect the windows or unload a truck with humanitarian aid—types of work that doctors do not do in everyday life.

**Dr. Czernin:** *In April, the Russians withdrew from Kyiv. Is the bombing largely over, or are the attacks continuing?*

**Dr. Kmetyuk:** The first month and a half was very dangerous because of the artillery. The Russians were so close that ground shelling came without air alerts. Ballistic missiles are still coming to Kyiv, hitting buildings and killing people. The last hit was last week. But the air alerts now sound off only 3–5 times per day. These alerts last for about an hour. You can imagine that it's not easy to work in this situation. We have to decide whether to continue with ongoing treatments. For radiation treatment, the patient usually stays in the treatment area with 2 team members who stay to finish the procedure. We do the same with PET scanning—we finish the acquisition and then take the patient to the shelter. Family members and accompanying persons are moved to the basement immediately when air alerts sound off.



**FIGURE 1.** Patients waiting in basement at Clinical Hospital “Feofaniya” in Kyiv.

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“For approximately 1.5 months 15–20 people lived with me in the basement. It was just enough staff to provide full-time radiation therapy.”

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**Dr. Herrmann:** *I would like to know, how we can help? Is there anything we can do apart from saying that we feel with you? Or is there anything where you say, “I wish you guys would do this for us?”*

**Dr. Kmetyuk:** Actually, you have helped a lot with your support. We see every day that European countries unite with the United States to provide increased support. Now, as the threat of tactical nuclear strikes and the threat of enemy-occupied nuclear power plants persists, we need portable radiation detectors. Other equipment, especially if not included in the list of critical wartime purchases, is needed. One example is that before the war in my department I found an error of up to 10% in standard dose calibrator measurements for  $^{18}\text{F}$  (leakage of inert gas from the chamber). Because this equipment is not included in the critical list, we will not be able to upgrade in the near future. I am also encouraged by your personal support. The knowledge that you are ready to help in case of, for example, my family being somewhere in Europe and unable to find assistance is very important for me, Ken. Since the beginning of the war, I have received numerous letters of support from colleagues in Europe, in particular my friend and guide to the world of PET/CT, Philipp T. Mayer, from University

Hospital Freiburg, Germany, and a longtime fellow hematologist, Andrea Galamini, from the Lacassagne Cancer Center in Nice, France.

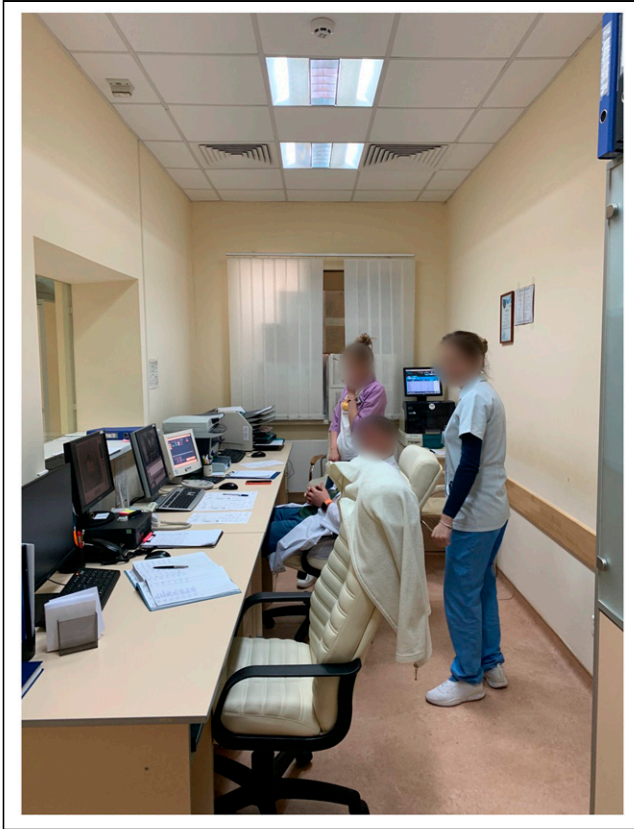
**Dr. Czernin:** *After the withdrawal of the troops from Kyiv, the Russian army moved to the eastern part of Ukraine. Are you in contact with the hospitals in this region, and how are they handling the current massive attacks and destruction?*

**Dr. Kmetyuk:** We have 46 nuclear medicine departments in our country of 40 million people, with only 4 PET/CT scanners. Nine of these departments have radiation treatment units. Kharkiv, a large city to the north and close to the Russian border, cannot currently provide diagnostic or therapeutic services because of the lack of medical staff. Many people left Kharkiv.

**Dr. Czernin:** *In a totally different context, the U.S. health care system lost many nurses and hospital employees at all levels during COVID. On a much larger relative scale you also have millions of refugees and displaced people. Do you have enough nursing, physician, and technologist capacity?*

**Dr. Kmetyuk:** Some of the medical personnel went to the west or to Europe, and some of them are still there. But many health personnel in eastern Ukraine, close to the fight, came to Kyiv. We





**FIGURE 2.** Author's nuclear medicine staff in the scanning room. Note boxes stacked against window to block flying glass from bombardment.



**FIGURE 3.** Soldiers from the trauma department.

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"I am proud of the colleagues with whom I work, and I admire their courage. I hope we will win soon and rebuild Ukraine to become an even better country than before."

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can now include these people in our workforce. We have 60 new doctors, nurses, and other medical staff.

**Dr. Czernin:** *When they come, is there a spirit of patriotism—that they have to do their part in the hospital to help the country?*

**Dr. Kmetyuk:** More than that: some of our colleagues from my hospital are now in various positions in the Ukrainian army.

**Dr. Herrmann:** *How do you cover for them when they go to the army?*

**Dr. Kmetyuk:** We have the time that until recently we spent with our families, on our hobbies, in our sports, and so on. It's not so hard to cover for your friend who fights if you live in the hospital. We get patients from the battlefield on trains, buses, helicopters, and every other means of transport, because the military hospitals in the west are totally full. Some doctors from my hospital went to Dnipro, to perform surgery at the largest military hospital there. But after a week they decided that it is easier to move patients here for treatment. We remain very busy here.

**Dr. Herrmann:** *You showed us several photographs illustrating the situation in the hospital. Can you explain what they show?*

**Dr. Kmetyuk:** Yes, you can see patients waiting in the basement (Fig. 1) and our staff in the scanning room (Fig. 2). The

windows are blocked with boxes to prevent glass from breaking in a close bombardment. Figure 3 shows soldiers from the trauma department, and Figure 4 shows my colleague, who came for a few days to perform some CT-guided biopsies and went back to Kharkiv to fight.

**Dr. Herrmann:** *What do you wish for, and what do you think is going to happen?*

**Dr. Kmetyuk:** People are better adapted to the situation now. In Kyiv it's much easier than it was 3 months ago, but you never know what to expect from Russia. They can try to attack Kyiv again at any time from the Belarus border. Our people who came back to Kyiv are nervous and traumatized. We don't know what will happen tomorrow. We try to live, to work, and to help people. I hope that it will end 1 day, hopefully soon, and all our families will be together.

**Dr. Herrmann:** *I am very impressed with the Ukrainian leadership. The president is a hero.*

**Dr. Kmetyuk:** He is. Yes, he inspires all of us, of course. President Zelensky could have left the country, but he did not. The same with the head of our hospital, Igor Semeniv, who stayed in the hospital throughout. It inspired our personnel. So, everybody stayed.



**FIGURE 4.** Author's medical colleague, who is also a fighter in Ukrainian army and was treated at Clinical Hospital "Feofaniya."

**Dr. Czernin:** *Yaroslav, we're coming to the end of this very emotional, moving, and sometimes sad discussion, buoyed by your optimism and heroism. Do you have a message to convey to our international readership?*

**Dr. Kmetyuk:** I did not prepare a formal message, but I can share with you my thoughts. I work in a rather narrow medical field. But now I see all these severe trauma cases—injuries that are just horrible—and I know that every one of us, every doctor, every nurse, especially in this time must do their best to work because this help is crucially important. I am proud of the colleagues with whom I work, and I admire their courage. I hope we will win soon and rebuild Ukraine to become an even better country than before.

**Dr. Herrmann:** *I hope that if I am ever in a similar position that I can be half as brave as you.*

**Dr. Kmetyuk:** Thank you.

**Dr. Czernin:** *Thank you very much, Yaroslav. We look forward to seeing you when this is all over.*