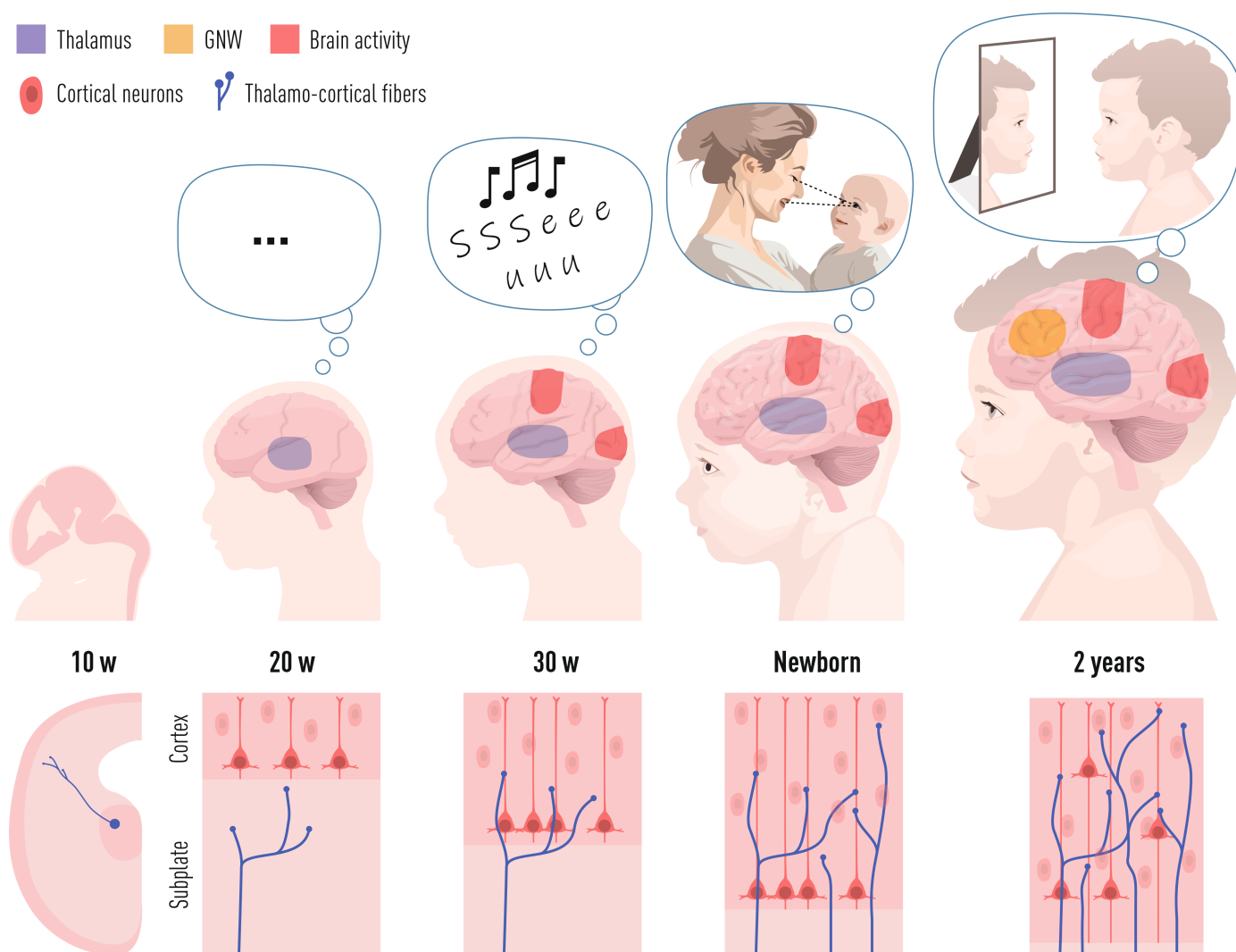


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PERSPECTIVE OPEN ACCESS

Medical Partnership Between Two Children's Hospitals in Ukraine and Sweden

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1 | The Russian Full-Scale Invasion and Its Effect on the Children of Ukraine

The Russian full-scale invasion of Ukraine in 2022 and the following blunt disregard for human rights have triggered massive support for Ukraine all over the free world. Like children in other conflicts, the children of Ukraine suffer in multiple ways with more than 660 dead and 1,700 injured. Today, one million children lack access to in-person schooling. Classrooms and playgrounds have been replaced by makeshift schools underground. Nine out of ten of the 6.3 million refugees outside Ukraine and the 3.6 million displaced refugees within Ukraine are women and children. Approximately 1.7 million children do not have access to safe drinking water and 3.4 million to centralised sanitation. At least 20,000 children have been kidnapped (displaced by force) to Russia or Russian-occupied territories for which international arrest warrants have been issued for Russian President Putin and the Children's Rights Commissioner Lvova-Bleova. The Russian targeting of civilian infrastructure and the upcoming winter cold will obviously be especially hard on the children.

2 | National Children's Specialised Hospital Okhmatdyt and Astrid Lindgren Children's Hospital

Despite the Russian atrocities, the Ukraine healthcare system has demonstrated resilience and remains highly functional. Okhmatdyt in Kyiv is the largest and most specialised children's hospital in Ukraine and a member of the European Children's Hospitals Organisation (ECHO). In 2023, Okhmatdyt and Astrid Lindgren Children's hospital at Karolinska University hospital, also an ECHO member, decided to form a medical partnership

with emphasis on a professional networking for discussing patient cases and sharing clinical experiences and clinical training of young physicians and nurses. A formal agreement for deeper collaboration was signed by Karolinska and Okhmatdyt on 1 December 2023. So far, Karolinska has received more than 100 patients from Ukraine, both adults and children.

Since then, colleagues have had personal internet contacts almost daily and physical meetings at ECHO board meetings around Europe and in Ukraine and Sweden. Our partnership was also highlighted at a recent international conference in Lviv, Ukraine, on medical partnerships organised by the First Lady of Ukraine and the Ukrainian ministry of health (Figure 1).

3 | The Partnership

In each hospital, senior consultants in 12 clinical areas were appointed as primary routes for contacts. Numerous zoom conferences and lectures have been held so far. A major part of the partnership is the clinical training of young Ukraine healthcare workers in Sweden. The colleagues in Kyiv select three physicians and one nurse based on strategic needs and individual experience and skills. Then the senior consultants and chief nurses together decide on an individual study plan for each fellow for a two-month fellowship at Karolinska. The fellowships are financially supported by the Ukraine ministry of health and the regional government in Stockholm. So far, two rounds of fellowship have been completed with a focus on neonatology, emergency room paediatrics, surgery, gastroenterology and intensive care. A third round is planned for this spring with a focus on cardiology and imaging, and we intend to plan one round of fellowships per semester. During the fellowships, the fellows study the

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Swedish paediatric health care system and children's rights in addition to their individual study plans. The fellows also present on the situation for children in Ukraine and their experience of war-time paediatric health care for hospital staff and for a wider audience through media.

In addition, eight colleagues from Kyiv have completed a one-week course in extracorporeal membrane oxygenation (ECMO) care, and a second course is planned for this spring (Figure 2).

These young colleagues return to Kyiv with a personal network of friends and colleagues and are drivers to strengthen

our partnership. It is also important to note that the fellowships provide an important temporary break for the young colleagues after years of stress day and night since the beginning of the war, even though they follow the news from home constantly.

Soon after the first round of fellowships, we reached out to the Swedish non-governmental organisation Beredskapslyftet for help. This NGO functions as a platform for mobilising resources from the corporate world to support society during crises and major events. Among a number of other projects in Sweden, Beredskapslyftet supports the Ukrainian community in Sweden with employment assistance, cultural events, weekend school



FIGURE 1 | Viktor Liashko, minister of health care, Ukraine, Svante Norgren, head of Astrid Lindgren children's hospital and Martina Quick, deputy head of mission, Embassy of Sweden, during a visit to the Okhmatdyt children's hospital in August 2024.



FIGURE 2 | Doctors and nurses from the Okhmatdyt children's hospital in Kyiv participated in a week-long emergency care training using the extracorporeal membrane oxygenation (ECMO) machine at the Karolinska University Hospital in December 2024. Photo: Josefine Franking/Karolinska University hospital.

and fundraising for humanitarian needs. In addition, the project Reskilling Ukraine was launched at the end of 2023 with the aim to help in the rebuilding of the country by reskilling and upskilling programmes addressing major labour market needs.

The NGO contributes with both a social program for the visiting fellows, financing and contacts with Ukrainian refugees in Stockholm. Together with Beredskapslyftet, we have started a fundraising effort to finance and expand our partnership. Since our partnership is anchored in personal contacts colleagues-to-colleagues, we can guarantee and demonstrate that the donations give maximal effect where it is most needed and that skill training and medical equipment are coordinated. So far, we have raised funding for intensive care including ECMO, surgery, imaging and heating.

The staffs of both hospitals are very engaged and proud of our partnership. A common question raised by the Swedish staff is if it is appropriate to ask the Ukraine colleagues specific questions regarding experiences of atrocities and hardships. Indeed, sharing of such personnel witness accounts builds trust and is an important part of the partnership and raises awareness of the situation in Ukraine. The benefits of the partnership go both ways. Sweden benefits from learning how to provide highly specialised healthcare for children during a prolonged crisis, including care for coworkers and collaboration and coordination with other branches of society. It is also important to stress that this is a long-term partnership, which will continue also in peacetime to take paediatric health care beyond previous standards.

4 | The Russian Missile Attack on Okhmatdyt in July 2024

Okhmatdyt was shamefully attacked by a Russian Kh-101 cruise missile attack on 8 July 2024. At the time of the attack, more than 1200 patients, family members, and staff were at the

hospital. The hospital was, as any hospital on a Monday just before noon, in full operation. Several complex surgical procedures were ongoing, including three open heart surgeries. Had it not been for the air defence and air alert system, the casualties and destruction would not have stopped at two dead and 300 injured, and 70% of the hospital damaged (Figure 3). The successful evacuation of patients to nearby hospitals was nothing short of a miracle. Already after a couple of weeks, the hospital was back in business, albeit at approximately two-thirds capacity. The attack triggered even increased support for our partnership among staff, the public and the government alike. The Ukrainian colleagues coming to Stockholm after the attack witnessed the resolve of their fellow colleagues and shared important experiences of the rescue work. We now intensified our fundraising to secure contributions to make the hospital ready to face the upcoming winter and to implement new skills and technology through our partnership.

5 | The Future and Lessons Learned

We are still in the beginning of our partnership. If we can inspire the formation of more partnerships, we are happy to further share our experiences. A challenge in our partnership is related to language skills. Few Swedes speak any Ukrainian, and English is not the second language of most senior healthcare workers in Ukraine. But this can be overcome by junior colleagues functioning as interpreters or using modern technology readily available in smartphones and online. *Zoom* and *WhatsApp* have been our preferred means to communicate over distance. By far the most important success factor is personal engagement, colleague-to-colleague, to build trust and support, to identify needs and means to help, and to raise funding and support from both governmental and non-governmental sources.

Despite the horrific Russian atrocities in this conflict, it is important not to forget that there are children suffering on both



FIGURE 3 | Doctor Volodymyr Zovniv in front of the Okhmatdyt children's hospital in Ukraine after the missile attack in July 2024. Photo: Natalia Kutko/Okhmatdyt hospital.

sides of any conflict, and the rights of the child apply to all children, including those on the Russian side. As paediatricians, we stand up and care for all children regardless of ethnicity and nationality.

6 | Fact Boxes

- National Children's Specialised Hospital Okhmatdyt, Ukraine: 720 beds, 11 000 surgeries/year, 21 000 inpatient stays/year, 2346 employees.
- Astrid Lindgren Children's Hospital, Sweden: 189 beds, 10 700 surgeries/year, 13 700 inpatient stays/year, 1600 employees.

Author Contributions

Zhovnir Volodymyr: conceptualization, writing – review and editing, writing – original draft. **Svante Norgren:** conceptualization, writing – original draft, writing – review and editing.