



# Unified European support framework to sustain the HIV cascade of care for people living with HIV including in displaced populations of war-struck Ukraine

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Ukraine is one of the countries in Europe most affected by HIV. The escalation of open war on the European continent has affected HIV care in Ukraine in an unprecedented way. Treating physicians in Europe have little experience on how to handle HIV-specific care under these circumstances. A framework is urgently needed that both defines and sets out strategies to handle the specific challenges for emergency support for people living with HIV, both those staying in Ukraine and those becoming displaced. The optimal allocation of the few available medical resources, primarily antiretroviral therapy, is necessary to best prevent individual morbidity and achieve population transmission control. Professional HIV networks play a central role to create, optimise, and execute support strategies. Through a rapid literature review we identified the key strategies needed to create a support framework, adapted to Ukraine's HIV epidemiology. We produce a unified support framework aiming to reduce the inevitable impact on Ukraine's HIV care cascade now, and when rebuilding it after the war.

## Introduction

Major investment in HIV testing and care has improved outcomes for the nearly 2·5 million people with HIV throughout the European continent in the past decade.<sup>1</sup> Despite this, Ukraine is still disproportionately affected. Only 69% of the almost 260 000 Ukrainian people with HIV are aware of their status and 57% receive antiretroviral therapy (ART) at one of the 389 HIV clinics in Ukraine.<sup>2,3</sup> Once on ART, more than 94% of those given the therapy reach viral suppression. In 2020, Ukraine reported 15 658 new HIV cases, 15% of Europe's total, and had an estimated 0·6% prevalence across its whole population. Compared with other European countries where infections are more common in men, Ukrainian men and women are, numerically, almost equally affected. Men who have sex with men account for a somewhat small, but increasing, proportion of new cases, although official numbers might reflect an underestimation of this proportion.<sup>4</sup>

Looking at key populations in Ukraine, people who inject drugs have a substantially higher prevalence of HIV than elsewhere in Europe. Currently, at least 38% of all people with a new HIV diagnosis have injecting drug use registered as the transmission route. In absolute terms, the annual number of new HIV cases in people who inject drugs continues to rise, unlike in contrast to the rest of Europe where cases due to injecting drug use are falling.<sup>4</sup> In all, this results in a HIV prevalence of more than 20% among Ukrainian people who inject drugs at present.<sup>5</sup> Opioid agonist therapy (OAT) coverage, a key tool to improve the wellbeing of people who inject drugs and HIV treatment adherence, is low.<sup>6–8</sup> According to the Public Health Centre of the Ukrainian Ministry of Health, 5·8% of people who use opioids were receiving

OAT in 2020 and less than 50% had access to clean needle programmes.<sup>2,9</sup> Without any changes, almost 60 000 new HIV cases are expected in this population in the next 10 years.<sup>8</sup> With only a 20% scale-up in OAT coverage during the same period, models from before the 2022 Russian invasion predicted nearly 11 000 averted HIV cases and 18 000 fewer deaths. Highly relevant for Ukraine's HIV epidemiology are those who were internally displaced after the outbreak of war in eastern Ukraine in 2014. Since then, an increased number of new strains found in Ukraine originated from Donetsk and Lugansk, correlating with migration and the clustering of sexually active people who inject drugs from those regions.<sup>10</sup> These groups have been identified as facing challenges to diagnosis, treatment, and remaining in care.<sup>11,12</sup> Other key populations also face challenges with high numbers of undiagnosed HIV, high HIV prevalence, less ART initiation, and low rates of viral suppression.<sup>13</sup> In addition to low ART rollout, the uncontrolled HIV epidemic is also driven by a notable prevention gap.<sup>9</sup> In Ukraine in 2020, only 2258 people received pre-exposure prophylaxis (PrEP) and 24 vertical transmissions were reported.<sup>3</sup> Major obstacles for prevention still exist, primarily of an administrative, financial, or legal nature.<sup>14,15</sup> Altogether, a clear mismatch exists between the needs of the populations at risk for HIV and the care available in Ukraine.

These factors and the struggling health-care systems (being overloaded, understaffed, and underfinanced) contribute to a high AIDS burden. Ukraine has the highest reported AIDS incidence with regards to newly diagnosed people with HIV in Europe (9·9 per 100 000 in Ukraine vs 1·2 per 100 000 European average in 2020) and registered the highest number of AIDS-related

deaths in Europe over the last decade. Tuberculosis is common, identified in 12.9% of individuals with newly diagnosed HIV, and is often multidrug resistant.<sup>2</sup> The care for HIV and comorbidities has been further affected by interrupted services because of the COVID-19 pandemic.<sup>16–18</sup>

Now, the escalation of war in Ukraine jeopardises HIV and AIDS care and drastically disrupts HIV care services.<sup>19,20</sup> As united European HIV experts, including the European AIDS Clinical Society (EACS) and EACS Young Investigators (YING), we state that the full-scale Russian invasion has destabilised the European continent and is an unacceptable threat to the care for people with HIV in Ukraine. This invasion immediately endangers the already sobering numbers describing the HIV epidemic in Ukraine and urgent attention is required in this area. Notable questions include what help to offer, how to offer it, and where to offer it. We therefore want to highlight the war's predicted effect on HIV, the rationale behind required crucial concerted actions by networks of health-care professionals and communities, and propose an evidence-based framework by a rapid review of the literature to counteract the inevitable damage to the HIV cascade of care now, and in the future, when this cascade needs to be rebuilt in Ukraine.

### HIV care and current actions in Ukraine

The war in Ukraine is unprecedented for European HIV health care and can be expected to affect all levels. The duration of this disruption is unpredictable, indicating that there should be preparation made for the scenario where people with HIV and their care providers need support for a longer duration. Within a few days, after the full-scale invasion commenced, hundreds of thousands of people sought protection within EU member states. In 1 month, more than 10 million people left their homes, with millions displaced within Ukraine.<sup>21</sup> A 2022 EU impact assessment predicted that 6.5 million displaced people will enter the EU.<sup>22</sup> Among refugees alone, we can expect tens of thousands of people with HIV and abruptly interrupted health-care services. Notably, occupied regions and those with current military activities are also most heavily affected by HIV. For the people with HIV who live within war-affected regions, even with local HIV services being open to some extent, the probability that drug availability, medical supply lines, and monitoring services are hindered and their capacity overwhelmed is high. The risk of disrupted HIV services is further increased with attacks on health-care systems, as reported by Ukrainian doctors.<sup>23</sup>

Essential elements of HIV care are rarely considered in initial emergency general health support programmes. Interruptions in HIV care might result in detrimental health effects: excess morbidity from viral rebound and emerging drug resistance (which was already difficult to detect before the war),<sup>24</sup> the vertical transmission of HIV,<sup>25</sup>

and a disrupted undetectable equals untransmittable framework to prevent sexual transmission within couples and the population.<sup>26</sup> HIV professional networks have a moral obligation to help protect the crucial aspects of HIV care promptly.

United efforts to support HIV care are emerging, including by UNAIDS, WHO, UNICEF, the US President's Emergency Plan for AIDS Relief, and the Global Fund to Fight AIDS, Tuberculosis, and Malaria. The charitable organisation All-Ukrainian Network of people living with HIV, together with Poland's Governmental Strategic Reserve Agency (Rządowa Agencja Rezerw Strategicznych), organised a delivery of 209 600 90-day supplies of tenofovir disoproxil fumarate, lamivudine, and dolutegravir (a generic single tablet of dolutegravir [50 mg], lamivudine [300 mg], and tenofovir disoproxil fumarate [245 mg]) to Ukraine. However, the distribution of such medications within the country might be challenging, particularly in active war areas. The Public Health Centre of the Ministry of Health of Ukraine coordinates with HIV clinics to assess their medication stocks. The shipments of medicines are arranged and redistribution between regions occur to solve interrupted normal logistical chains.

Ukrainian HIV physicians have gained experience in providing HIV testing and treatment services with mobile HIV teams, which can now be used for internally displaced people in remote areas. These teams of physicians are rapidly deployable to where refugees cluster to support local health-care providers with HIV specific services. There is a need to involve online technologies and mobile health solutions, in addition to expanding the number of health-care institutions, private clinics, and family doctors that provide HIV care. To provide the entire population of those with HIV with access to ART in Ukraine, sufficient supplies are essential. This need means that a high volume of ART donations are needed. Barriers to do so are, however, present; for example, when physicians throughout Europe want to send a surplus of ART to the clinics of their colleagues in Ukraine, they encounter legal obstacles.

With regard to OAT, most sites are able to function (except in hard besieged cities such as Mariupol and Okhtyrka) and have sufficient OAT for at least a month. The usual supply chains for OAT have, however, been disrupted.<sup>27</sup> Two factories that produced OAT in Kharkiv and Odessa have been closed because of shelling. OAT clinics also are at a risk of becoming non-operational because of military actions. This risk results in uncertainty about the continuation of OAT in the future, and resulted in the Ministry of Health initiating the international procurement of methadone and buprenorphine and calling for donations. Additionally, OAT programmes were adjusted, allowing take-home supplies and enacting the rationing of OAT to cover the basic needs. Another major concern is the OAT services in occupied areas. Russian authorities shut down all

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medication-assisted treatment programmes for patients with opioid use disorders after the annexation of Crimea in 2014, leading to involuntary detoxifications and deaths.<sup>28</sup> This previous occurrence has created a precedent for a similar scenario on a larger scale now. In all, Ukrainians living with HIV are at a high risk of interrupted HIV treatment, and for people who inject drugs, an added risk of suboptimal OAT looms.

### HIV care and current actions in neighbouring countries

As reported by the UN Refugee Agency, by March 23, 2022, 1 month after the full-scale Russian invasion, 2173 944 refugees had entered Poland, 563 519 had entered Romania, 374 059 had entered Moldova, and 330 877 had entered Hungary.<sup>29</sup> Ukraine's neighbouring countries have reacted rapidly and created response networks to provide shelter and social and medical assistance to refugees. However, local regulations and social norms in neighbouring countries might create a sociocultural gap or the premise for stigma for key populations, such as people who inject drugs or men who have sex with men, suggesting an unmet need for equitable and inclusive solutions. Furthermore, language barriers and the absence of culturally appropriate services can present structural barriers to health-care service use.<sup>30</sup>

Substantial efforts to sustain HIV care have been implemented in the four countries that currently shelter most of the refugees. Poland started functioning not only as a major humanitarian help funder, but also as a hub for aid from pan-European organisations. Mechanisms that were put in place in Poland because of the COVID-19 pandemic—namely, the Rządowa Agencja Rezerw Strategicznych—are particularly helpful. These mechanisms have quickly enabled the processing of major ART donations. Moreover, the Polish government accepted all Ukrainian refugees into the social and public health-care system, including the provision of free ART.<sup>31</sup> Romania started an emergency ordinance to establish universal access to shelter, food, and clothing, including the right to receive free medical care and treatment for all refugees. This ordinance specifically covered access to national health programmes, including medication and ART freely supplied on a monthly basis, antenatal HIV screening provided to assess vertical HIV transmission prevention, and access to national immunisation programmes. Similar aid projects have been initiated in Hungary and Moldova, with free health care including HIV care, free translator services, and a hotline for those needing HIV care or OAT.

However, a lower than anticipated number of refugees have accessed HIV care in these neighbouring countries. For example, Romania reported a low number of people with HIV presenting to HIV clinics by March 22, 2022, and similar patterns have emerged from Moldova and Hungary. Several potential explanations exist. One

could be that a fairly large proportion of refugees plan to only transit through neighbouring countries on their way to other countries, but it could also indicate deficiencies in communicating HIV service availability or access to care. Another possibility is refugees fearing stigma when disclosing injecting drug use or sexuality, as well as the prioritisation of basic needs over health, difficulty navigating complex administrative processes, and concerns about the confidentiality of and mis-treatment by health-care providers.<sup>32</sup> Most people with HIV will travel with some ART supply, leading to a rise in refugees seeking help in the near future when personal supplies run out. Furthermore, although post-exposure prophylaxis is generally available in neighbouring countries, PrEP is not. This situation is illustrated by the fact that in Romania, PrEP was offered for free to only 150 people in 2020, meaning that people who require it the most have to overcome financial barriers to access PrEP.<sup>33</sup> Of relevance for the Ukrainian HIV situation, the access to OAT might vary substantially between EU countries. No official statistics are available on refugees accessing these harm reduction programmes. It should also be noted that most men (who require the most OAT in Ukraine) are not allowed to leave Ukraine under martial law and require these services to be available in Ukraine.

### HIV care and EU actions

Throughout the EU, temporary protection mechanisms have started to create a welcoming system for Ukrainian refugees. Ukrainians can enter any EU country and spend up to 90 days without a visa. The European Commission has invoked the Temporary Protection Directive since March 3, 2022, to offer quick assistance in European countries to people who have fled Ukraine.<sup>22</sup> This directive comes in addition to the right to apply for international protection, to now allow refugees to request temporary protection anywhere in the EU for 1 or 2 years. This way, they can quickly gain rights, including a residence permit, bank accounts, access to the labour market, housing, entitlement to medical assistance, and access to education for children.

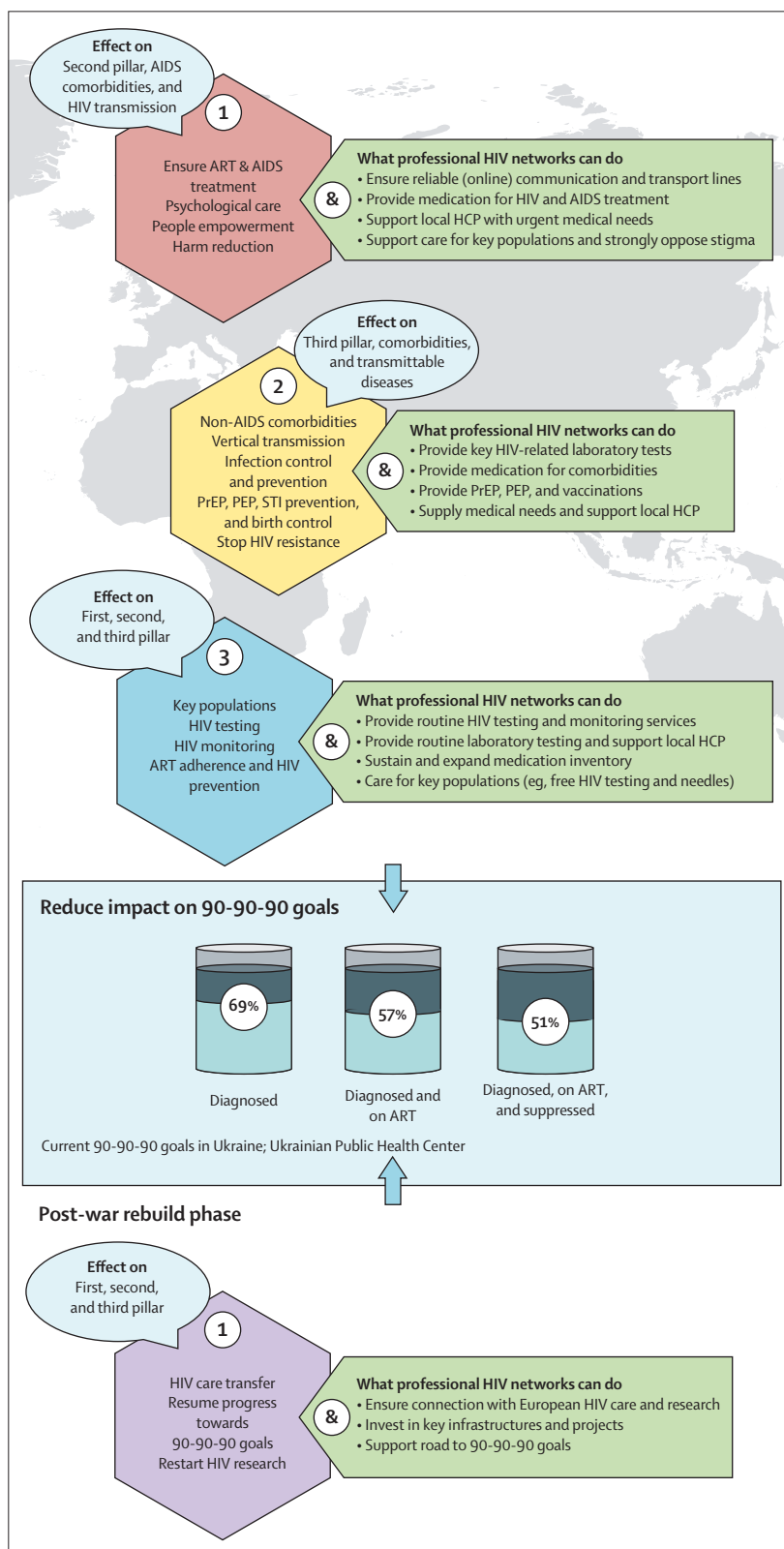
Overall, tremendous efforts have been made to support the health care of Ukrainians (including those with HIV) during the war, in Ukraine, by neighbouring countries, and by the EU. Many of the rapid solutions described will, however, not be sustainable because of the human resources or clinical experience they require and limitations in national budgets. ART price negotiation or patent protection waivers are needed to assure continuous ART delivery. Professional HIV networks can help with regards to these issues, and with HIV care for those in need. We outline the essential aspects of such humanitarian aid in light of the HIV 90–90–90 goals and adapted these aspects into a framework of emergency HIV care for Ukraine that can be used by professional HIV networks (figure).

## Framework of emergency HIV care for professional HIV networks

### Identification of evidence-based activities

A key priority is to identify evidence-based activities that sustain the HIV cascade of prevention, treatment, and care for people with HIV, including the displaced population during the war. To find an evidence-based answer to support 90–90–90 goals, we reviewed the literature that quantitatively describes HIV epidemiology and HIV care support interventions during wartime. We searched MEDLINE, Embase, and Web of Science (appendix pp 1–2), and we included peer-reviewed studies from European or African conflicts after 2014 when the UNAIDS 90–90–90 concept was first introduced. Articles focusing on HIV care in Ukraine were included without restrictions on the time-window, article type, or the outcome measures reported. Two authors (JIB and CR) independently screened all 1000 identified records first and assimilated them in a final selection of 30 articles (appendix p 1).

To structure these data for a useful framework, we used the minimum initial response sets from the UNAIDS guidance on humanitarian help,<sup>34</sup> which defines the essential actions that need to be done immediately regardless of the situation and actions that can be done at a later stage depending on the available resources and circumstances. In line with this guidance, we established four phases of emergency HIV support in Ukraine: immediate, urgent, consolidation, and post-war phases (table). The first two phases should be executed simultaneously, but the separate categories are meant to acknowledge the fact that health-care professionals will need to prioritise what aspect of HIV care to address first in settings with scarce resources and clinical complexity. The consolidation and post-war phase should be executed as soon as the situation allows. Within these four phases, we discuss the crucial aspects to support the 90–90–90 goals based on internationally accepted HIV standards from guidelines,<sup>67</sup> our clinical experience, and accounting for expected scarcity. Universally essential to all phases is a crucial



**Figure: Essential aspects of HIV-related humanitarian aid in Ukraine in light of the 90–90–90 HIV cascade of care goals**

The three phases of emergency HIV care during war and the rebuilding phase of HIV care after the war, depicted in four sections. The three principle pillars of the HIV 90–90–90 cascade of care that are supported by actions within these phases are highlighted above each section. In the boxes to the right of each section, the key points of potential humanitarian aid where professional HIV networks can contribute are indicated per phase. The ultimate aim of the four phases of HIV emergency care and humanitarian aid is to reduce the inevitable damage to Ukraine's HIV cascade of care, which is illustrated in the middle part of the figure where the current HIV cascade of care in Ukraine is shown as benchmark. ART=antiretroviral therapy. HCP=health-care providers. PrEP=pre-exposure prophylaxis. PEP=post exposure prophylaxis. STI=sexually transmitted infection. Red=immediate phase. Yellow=urgent phase. Blue=consolidation phase. Purple=rebuilding phase.

See Online for appendix

need to know, in real-time, where scarce medical resources or medical response teams for continuing HIV care locally and for those displaced are needed. For this, professional HIV networks should ensure (online) direct communication pathways with people with HIV, with local HIV physicians, and between these two groups at all times.

For the OST app see <https://zpt.org.ua/uk/>

### Immediate phase

During the immediate phase of HIV emergency help, the priority is to guarantee uninterrupted access to ART and medical supplies for continuous HIV and AIDS treatment in conflict areas and among people with HIV who have been displaced. Attention is warranted to care for very sick people with HIV, war-injured people with

## Essential factors to optimise care

### Immediate phase

#### Ensure ART distribution, access, and continuation

Establish swift, safe, and targeted logistics for ART supply<sup>35</sup>

Solid communication lines within, and support of, professional HIV networks; non-human-operated transport of ART by drones to unsafe war zones; use of professional HIV networks and associated support initiatives for expertise and infrastructure (eg, EACS's aware.hiv Ukraine initiative<sup>36</sup> and ECEE's ART for Ukrainians abroad initiative<sup>37</sup>)

#### Key population support

Ensure the identification of people with HIV, considering Ukrainian key populations with a high HIV prevalence<sup>38-42</sup>

Registration of patients (including refugees) in need of ART; a proactive approach by health-care providers to identify those with HIV in key populations and overcome stigma; sufficient operational HIV expert teams on the ground; medical outreach teams to reach remote areas or areas without operational clinics because of warfare

#### ART coverage

Provide ART to patients<sup>43-47</sup>

A proper assessment of current and near-future available resources; clinical HIV severity assessment by WHO staging; ART triage by clinical severity if there is a scarcity of supply; increase links to care of identified people with HIV by creating communication means adapted to personal preferences, including by providing mobile phones; setup of multidisciplinary mobile teams for ART provision with doctors, nurses, psychological health-care providers, social workers, and peer-to-peer support, equipped with point-of-care molecular tests (eg, PCR for HIV viral load, hepatitis, and tuberculosis), and emergency HIV care in displaced communities or people stuck in warfare, and operating within the existing mobile teams network of the Alliance of Public Health; health-care providers available with experience prescribing ART or with access to a professional HIV network or guidelines; facilitate the integration of people with HIV into health-care systems in host countries and facilitate resource availability (ie, medication, foremost dolutegravir-based regimens including TLD)

#### Prevent vertical transmission

Provide ART antenatally, perinatally, and postnatally<sup>48,49</sup>

Identify and link patients to care; health-care providers experienced in HIV obstetric care and vertical transmission prevention with access to a professional HIV network or guidelines

#### Management of AIDS

Establish swift, safe, and targeted logistics for medication (eg, cotrimoxazole; and rifampicin, isoniazid, pyrazinamide, and ethambutol)<sup>35,24</sup>

Solid communication lines within, and support of, professional HIV networks (eg, online consultation for complex cases); use of professional HIV networks and associated support initiatives for expertise and infrastructure (eg, EACS's aware.hiv Ukraine initiative,<sup>36</sup> and ECEE's ART for Ukrainians abroad initiative<sup>37</sup>); proper assessment of current and near-future available resources; medication triage by clinical severity if there is a scarcity of medication

Free access to health-care services to help in the early detection of opportunistic infections<sup>24,26</sup>

Resources (clinics and medication) available; appropriate liberal governmental health-care regulations and swift policy implementation

Identify patients in need and allocation of AIDS medication<sup>46</sup>

Registration of patients with AIDS; identifying AIDS by clinical assessment; health-care providers available with experience in managing AIDS or with access to a professional HIV network or guidelines

#### Psychological and social support

Provide prompt care for acute severe psychological stress due to war trauma experiences<sup>49-51</sup>

Empathy by health-care providers; identify and treat post-traumatic stress syndrome, severe depression, anxiety, and suicidal ideation in people; integration of mental health care in HIV prevention and treatment programmes; collaboration with health-care providers from professional HIV networks experienced in war-related trauma

Support HIV key populations who suffered from war-related violence<sup>51,52</sup>

Educate health-care providers in the mental health of key populations including sex workers, men who have sex with men, and people who inject drugs affected by both HIV and violence

#### Emergency harm reduction programmes

Support people who inject drugs with HIV and those at a high risk of HIV<sup>40,47,53,54</sup>

Continue OAT programmes in operational local clinics; make OAT accessible for displaced population using online tools (eg, OST application) and case managers; monitor the involuntary detoxification of people who inject drugs coming from Russian occupied areas; make resources (OAT) available by support programmes or donations

#### People empowerment and overcoming stigma

Inform patients about the importance of continuing ART and whereabouts of operational HIV clinics<sup>43,45</sup>

Collaborate with local community-based and non-governmental organisations; provide mobile phones and use messaging and traditional and social media for communication; create and communicate information about safe havens; up-to-date information

Prevent internal and anticipated external stigma and discrimination that decrease wellbeing<sup>51,55</sup>

Use of peer support and medical outreach teams; active HIV advocacy groups, including for key populations, communicate where people with HIV can go to for support

### Urgent phase

#### Non-AIDS coinfections care and HIV drug resistance

Establish logistics for, and use of, laboratory tests including emergency access for urgent viral load and HIV drug resistance monitoring<sup>40,46,35</sup>

Drug resistance testing in people with HIV without viral suppression on ART; trained operators and rapid, point-of-care molecular tests present in clinics; resources to test available

(Table continues on next page)

## Essential factors to optimise care

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## Comorbidities and coinfections treatment

Establish swift, safe, and targeted logistics to provide medication for comorbidities and coinfections and salvage ART<sup>37,45</sup>

Ensure there are operational local HIV clinics and use mobile HIV teams; experienced health-care providers available or access to professional HIV networks or guidelines; medication triage by clinical risk assessment if there is a scarcity of medications

## Care for women and children with HIV

## HIV maternity care

Obstetric monitoring and delivery services, including during the postnatal feeding period and HIV monitoring operational with trained health-care providers

Paediatric HIV care<sup>51,52</sup>

HIV-specialised paediatricians available on site or via professional HIV networks

Counselling about gender inequalities and intimate partner violence<sup>48-50</sup>

Identify those at risk for violence and use safe havens; integrating HIV and sexual and reproductive health services; access to sexual assault reference centres

## Infection control and prevention

Establish vaccination facilities (eg, COVID-19, measles, polio, influenza, pneumococcal, and other childhood vaccinations)<sup>42</sup>

Ensure vaccination transport, storage, and delivery chains; identify those at risk from being in areas of low vaccine coverage (eg, in Kharkiv); vaccination triage by clinical risk assessment if there is a scarcity of vaccinations; reinforce primary care and public health facilities; promotion of screening and preventive health by health organisations and government; resources (vaccinations) available

Screening for infectious diseases, primarily tuberculosis, and interrupt transmission of coinfections<sup>42,56,57</sup>

Tuberculosis surveillance and provision of Directly Observed Therapy in clinics or mobile teams for remote areas; overcome stigma and practical barriers (foremost for migrants and displaced people) by outreach work and awareness raising; free testing; resources (point-of-care tests) available

## PrEP, PEP, STI prevention, and birth control

Identify key populations in need for key preventive services for sexual health<sup>10,42,48-50</sup>

Establish list of patients from key populations eligible for preventive services; proactive engagement in key population identification and preventive care by health-care providers; ensure free, easily accessible preventive care without stigma; resources for prevention available (condoms, ART, and contraceptives)

## Sexual violence

Provide preventive services for Ukrainian key populations and victims of war-related sexual violence<sup>48-50,58</sup>

Educate health-care providers or have health-care providers experienced in responding to sexual violence and preventive services available; medication triage by clinical risk assessment if there is a scarcity of medications

## ART adherence and HIV prevention optimisation

Focus on Ukrainian populations at risk for ART non-adherence, loss to follow-up, or acquiring HIV<sup>10,44,45,47,48,51-54</sup>

Support adolescents during transition phase; expand harm reduction programmes, specifically opioid agonist programmes, needle exchange services, and substance (alcohol and drugs) detoxification programmes; increase linkage to care by starting social support systems including for people with a low level of education specifically, and providing mobile phones; make HIV clinics available  $\leq 15$  km of people in need and use medical outreach teams for proactive care in more remote areas; resources (OAT and needles) available

## Consolidation phase

## HIV testing

Initiate widespread testing for all people at risk of HIV infection by risk behaviour and HIV indicator conditions<sup>47,59-61</sup>

Free and widely available HIV testing services including in countries welcoming refugees with good accessible health-care services; HIV testing destigmatisation; specific focus risk assessment of non-traditional key populations such as soldiers and people who have been in contact with injured people; resources (HIV rapid tests) available

Population-based HIV or health impact assessment (web-based) surveys and testing<sup>47,55</sup>

Standard health interviews and free testing according to an evidence-based standard operating procedure upon arrival in a country welcoming refugees

HIV mobile, workplace, and home-based testing services<sup>43,45,47,60,61</sup>

Integrate testing facilities in mobile HIV outreach teams; easy and free testing kits available for at work or home

## HIV diagnostics monitoring and follow-up

Start routine monitoring and testing for viral load, CD4 T-cell count, basic blood measures, and basic supportive diagnostic means (x-ray, ultrasonography, microscopy, bacterial culture, and diagnostic methods for opportunistic infections and cancers)<sup>47,35</sup>

Trained personnel and operational facilities with closed feedback loops for results; consultation options with professional HIV networks or guidelines in complex case consultations; integrate testing and radiological facilities in mobile outreach teams; test triage by clinical risk assessment if there is a scarcity of tests; establish individual electronic medical record systems; laboratory and radiological resources available

## Post-war rebuild phase

## HIV care transfer and continuation

Restart or rebuild HIV care facilities in the country<sup>62,43</sup>

Solid communication lines within, and support of, professional HIV networks to rebuild and expand connections (or reconnect) with European HIV care networks and research; clinical handover from countries that housed refugees of electronic medical records to health-care providers

## Resume 90-90-90 goals and HIV research

Reinstall national HIV epidemic monitoring systems<sup>63,45</sup>

Operational national health-care systems to track 90-90-90 goals; investments in key infrastructure and projects focused on health care; resources available to restart care

Restart HIV research projects on hold<sup>66</sup> and initiate new HIV research projects

Persevering and creative clinician scientists; link Ukrainian health-care providers via professional HIV networks to associated international research initiatives

Note: basic human needs such as shelter, food, water, and safety are important and essential in all phases. ART=antiretroviral therapy. EACS=European AIDS Clinical Society. ECEE=Euro guidelines in Central and Eastern Europe. MTCT=mother-to-child transmission. OAT=opioid agonist therapy. PEP=post-exposure prophylaxis. PrEP=pre-exposure prophylaxis. STI=sexually transmitted infections. TLD=generic dolutegravir (50 mg), lamivudine (300 mg), and tenofovir disoproxil fumarate (245 mg).

**Table: Timing and content of evidence-based essential services and emergency support of the care for people with HIV, comorbidities, and key populations during war**

HIV, those with AIDS, and pregnant women with HIV. Studies have shown that the HIV prevalence in people displaced from HIV endemic settings is high.<sup>38–41</sup> With the focus of the war now in the eastern, southern, and central parts of Ukraine, the population of people with some of the highest HIV infection rates in the country is affected and deprived of access to harm-reduction programmes, resulting in a high chance of viral spread because of migration internally and internationally.<sup>10,62</sup> Convincing evidence exists that adequate HIV treatment and linkage to care programmes are effective during war, and HIV networks should support implementing these initiatives, regardless of the local situation.<sup>43–47</sup> To help with this core aspect of HIV care, EACS published a statement on HIV care shortly after the full-scale invasion of Ukraine started, helping to create a unified response and sense of urgency in Europe.<sup>68</sup> In response, the YING network initiated the support programme named *aware.hiv* Ukraine (Dare to Share Care) to further engage HIV care providers and scientific and community organisations throughout Europe to offer medical support, and to help medically and financially.<sup>36</sup> Likewise, Euro guidelines in Central and Eastern Europe (ECEE) introduced an initiative named ART for Ukrainians abroad in collaboration with Ukrainian doctors and officials.<sup>37</sup> Through this initiative, many medical centres throughout eastern and central Europe help displaced people with HIV to receive HIV care in their countries.

Looking at the ART components necessary in these kind of support programmes and considering Ukraine's access to generic ART, most people with HIV (>80%) use dolutegravir plus lamivudine and tenofovir disoproxil fumarate. A much smaller proportion is administered efavirenz or boosted protease inhibitor-based regimens. Dolutegravir plus lamivudine and tenofovir disoproxil fumarate as a single tablet formulation is, however, not a routine first-line regimen, and is often simply unavailable in many EU countries. From a clinical viewpoint, especially in the temporary absence of viral load monitoring, starting a potent triple drug regimen with a high genetic barrier and that is integrase inhibitor-based is a reasonable strategy in people with HIV who are not being administered ART and have no medical record available. Depending on ART supplies, this method could mean switching drugs in a substantial number of people. Creating treatment algorithms for continuing or switching ART in EU countries is necessary and their creation should factor in the available resources of national HIV treatment programmes. With ART support should come the means to manage urgent AIDS conditions and prevent vertical transmission. Specific to war-related humanitarian crises, tackling war traumas and severe psychological stress as early as possible by support initiatives is crucial given their association with risk behaviour in association with HIV acquisition, violence, and decreased ART

effectiveness.<sup>48–50</sup> All these early, necessary initiatives require measures to inform, educate, and monitor people. A notable priority we identified in the immediate phase is to give all people living with HIV a sense of control by creating safe havens, using direct messaging services, outreach teams, and peer support to prevent the fear of stigmatisation.<sup>44,45</sup> Handling linguistic, cultural, or administrative barriers in other countries further helps people with HIV to gain control of their health condition.<sup>55</sup> Hearing the voices of and supporting the actions of HIV advocacy groups is equally important here.

### Urgent phase

The urgent phase further promotes the crucial aspects of HIV care. One priority in this phase is the care available for sexually or airborne transmissible pathogens that affect people with HIV from Ukraine including syphilis, vaccine preventable respiratory diseases, and tuberculosis. Given their prevalence and transmission route, tuberculosis and COVID-19 are particularly notable and might spread rapidly in crowded refugee settings. The means to promptly identify tuberculosis, COVID-19, and other pathogens, and (re)start treatment, preventive therapy, or vaccination, are essential. Drug resistance can develop with interrupted tuberculosis treatment, and self-isolation or using adequate personal protection is virtually impossible or might simply be unavailable.<sup>42</sup> Additionally, for blood transmissible pathogens such as hepatitis C, accounting for the high use of injecting drugs, prevention measures need to be implemented early; surges in hepatitis C transmission were observed in internally displaced Ukrainians.<sup>56</sup> This finding emphasises the need for screening for communicable diseases in Ukrainian refugees using a universal risk-based approach.<sup>57</sup>

Next, given the contribution of key populations to the Ukraine HIV epidemic, systems to support people at risk for suboptimal drug exposure, or in whom the consequences of suboptimal therapy are high, are necessary. For people who inject drugs, this should at the very least include OAT and needle exchange programmes.<sup>35</sup> Initiatives such as *Nasha Dopomoga* or the Global Fund supported *Alliance-Ukraine* have provided this care during the war since 2014, but have encountered substantial political obstacles in HIV prevention services requiring international collaboration and donors.<sup>53,54</sup> Efforts to integrate HIV services with OAT programmes have been started and should be supported to continue. This support includes the possibility to receive HIV and OAT medications in one place for a period of time. For this initiative, ensuring sustainable and flexible supply chains is a crucial response component.

Care for women and children also requires specific attention. Making broad psychological support systems

available for children and adolescents at risk of, or living with, HIV is needed. Specialised paediatricians and safe havens play central roles. For adult men and women at risk of sexual violence, similar support is needed. Failure to provide help here will lead to higher HIV burdens in transgender people and women and men at risk of sexual violence, sex work,<sup>49,51,58,59</sup> and more transactional sex among younger people.<sup>48,52</sup> As soon as possible, pregnant women with HIV will need additional multidisciplinary management in addition to the minimum care provided already in the immediate phase. This care should consist of HIV and obstetric medical specialists to avoid ART coverage reductions, treat perinatal complications, and prevent vertical transmission (also postnatally during breastfeeding).

All these priorities warrant a swift setting up of HIV viral load measurement and resistance monitoring to track the epidemic and give personalised medical care; existing mobile HIV teams might help with regards to this initiative. The last crucial aspect in this phase is preventive services, which are paramount to install. By having the means set up to empower people to speak up and identify their needs along with free and accessible services on the ground, the administration of PrEP and post-exposure prophylaxis should be ensured and supported. The first two phases reflect the essential earliest responses that need to be established appropriately to prevent unacceptable HIV-related morbidity and mortality in Ukrainian victims of war.

### Consolidation and post-war phases

In the consolidation phase, with the structure in place to provide the most essential clinical HIV-related care, aid can be expanded to support free routine HIV testing and monitoring services, including with basic laboratory work.<sup>60</sup> This expansion means offering tests, not only those for traditional risk factors such as with HIV indicator conditions but also taking into consideration war-related risks such as exposure to blood–blood contact on the battlefield or emergency lifesaving transfusions of blood products that might not have been screened adequately. Keeping a basic electronic medical record system helps to provide better care and handovers to other health-care providers. Because this phase might last longer than hoped and despair might enter communities, it is important that people continue to feel accepted and able to express concerns about their medical conditions related to HIV. Here again, mobile care providers and peer-support workers should be enlisted to create a supportive environment.

The last phase we identified is the post-war rebuilding phase. Notably, the support from professional HIV networks should continue to help operational local clinics. A priority, therefore, is to help Ukrainian HIV physicians to achieve the Sustainable Development Goals and support local HIV care improvement initiatives.

Continued attention is needed to screen for risk factors,<sup>61</sup> especially in those who suffered from war traumas (including abduction) or post-traumatic stress disorder who will also need mental health support with trauma-informed HIV services.<sup>63–65</sup> Support would be needed to help restart research initiated before the war,<sup>66</sup> and to set up new research projects in Ukraine. It is the responsibility of scientific professional HIV networks to also ensure the connection of Ukrainian clinicians and scientists to the international research community and to support their initiatives.

### Conclusion

Altogether, the crucial elements of support described in these phases earlier have allowed for the creation of a practical framework with the aim to decrease the inevitable effect on the HIV 90–90–90 goals in Ukraine as much as possible. Professional HIV networks of medical specialists are essential here to support the basic crucial functioning of all three pillars in the cascade of care. Networks can help provide the means for easy, accessible HIV services and clinical expert assistance to colleagues. EACS, YING, and ECEE are relevant examples of a large professional network supporting contact with affiliated Ukrainian HIV physicians. Their actions illustrate how professional networks should use their established infrastructure to get financial and medical aid to the right places. Similarly, they can channel support from larger organisations and pharmaceutical companies. The networks, as key medical expert and scientific organisations, should continue to play their role both during and after the war when rebuilding, as indicated in the framework. Notably, professional networks also harness a broad sense of willingness to help Ukraine by HIV health-care professionals in the field. Such networks, and their actions, help health-care workers to feel supported and might thereby relieve them some of the unavoidable psychological and physical burdens of this crisis.

Professional HIV networks that connect people and countries can, and should, ensure the best possible care for people with HIV, even under the most challenging of circumstances. Concerted actions as we propose are now more crucial than ever to reduce the impact on the HIV cascade of care in Ukraine and to rebuild HIV services in the future.

### Contributors

MV, AS-K, JIB, OS, and CR conceptualised the viewpoint and rapid literature review, and wrote the original drafts. CG, AL, AC, CDS, DR, MB, MCA, SN, AW, TJB, LW, and SB reviewed and provided input on the initial drafts. CJ helped with the data curation, data investigation, illustration design, and project administration. MV, JIB, WB, and CR conducted the literature review. AS-K, OS, BL, LT, and JK as a group of coauthors from neighbouring countries of Ukraine provided key input on the humanitarian aid responses of the neighbouring countries to help the people with HIV who fled from Ukraine. MV, TKo, TKy, KD, VB, PS, SvA, SeA, TIV, and AM as group of coauthors from Ukraine provided the essential data on the current status of available HIV resources, HIV epidemiology, and the care for people living with HIV, including those



from key populations, in Ukraine and gave direct insight into how the war has affected and is still affecting Ukraine's HIV cascade of care. MV, AS-K, JIB, OS, and CR wrote the final version of the manuscript. All other authors had equal contributions towards finalising the manuscript. MV and CR coordinated the writing process and communication with the coauthors. CR supervised the work. All authors reviewed and approved the final version for publication. MV and CR accessed and verified the data.

#### Declaration of interests

JIB declares grants or contracts from Gilead, Janssen, MSD, and ViiV healthcare; and consulting fees from Gilead, Janssen, MSD, and ViiV healthcare. OS declares grants and honoraria from Gilead. AL declares grants or contracts from Gilead, My Cartis, and ViiV healthcare; consulting fees from Janssen and ViiV healthcare; and payment of honoraria from Gilead, Janssen-Cilag, and ViiV healthcare. AC declares grants or contracts from Gilead; and payment or honoraria from Gilead, Janssen-Cilag, MSD, and ViiV healthcare. CDS declares payment or honoraria from AbbVie, AstraZeneca, Cepheid, Formycon, Gilead, GSK, Janssen, Molecular Partners, MSD, Roche, Swedish Orphan Biovitrium, and ViiV Healthcare; and support for attending meetings or travel, or both, from AbbVie, AstraZeneca, Cepheid, Formycon, Gilead, GSK, Janssen, Molecular partners, MSD, Roche, Swedish Orphan Biovitrium, and ViiV Healthcare. SN declares grants or contracts from Gilead and ViiV healthcare; consulting fees from Gilead, Janssen, MSD, and ViiV healthcare; and support for attending meetings or travel, or both, from Janssen, Gilead, and ViiV healthcare. AW declares grants and consulting fees from Gilead, Janssen, and ViiV healthcare. TJB declares grants or contracts from Gilead, Janssen, MSD, Roche, Thera, and ViiV healthcare; support for attending meetings or travel, or both, from Gilead, Janssen, MSD, Roche, Thera, and ViiV healthcare; consulting fees from Gilead, MSD, Roche, Thera, and ViiV healthcare; and payment or honoraria from Gilead, Janssen, MSD, Roche, Thera, and ViiV healthcare. LW declares consulting fees from Cipla, Gilead, Merck, Mylan, Theratech, ViiV healthcare; payment or honoraria from Gilead, Janssen, Merck, Mylan, Theratech, and ViiV healthcare; and research grants from Gilead, Janssen, and ViiV healthcare. SB declares consulting fees and honoraria from Gilead, MSD, Roche, Sobi, ViiV healthcare. CR declares support for the present manuscript from Aidsfonds and Dutch Federation Medical Specialists; grants or contracts from Erasmus MC Fellowship, Gilead, Health-Holland, Janssen, MSD, ViiV healthcare, and ZonMW; consulting fees from Gilead and ViiV healthcare; and payment or honoraria from Gilead, ViiV healthcare, and Virology Education. All other authors declare no competing interests.

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