Polio in Ukraine
Crisis, Challenge, and Opportunity

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A Report of the
CSIS GLOBAL HEALTH POLICY CENTER
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Executive Summary

Two children contracted polio in western Ukraine, right at Europe’s doorstep, in August 2015. This outbreak and response laid bare the degree to which Ukraine’s immunization and overall health system are broken, well beyond what had been commonly understood, crippled by deep corruption, inadequate financing, and widespread popular mistrust. In global terms, Ukraine, the black box of eastern Ukraine, and some neighboring countries amount to a regional danger zone of weak health security capacities to prevent, detect, and respond to threats. The United States and others are well advised to recognize this threat and mobilize accordingly. This outbreak had nothing to do with Ukraine’s ongoing conflict with Russia. On the contrary, it highlights and exposes Ukraine’s endemic vulnerabilities. Though external interests managed to rally to launch new campaigns (after frightening delays), the acute shortcomings plaguing Ukraine and others in the region persist. No one should rest easy that Ukraine appears to have whistled past the graveyard during this incident. The proper reaction from the global health community is a sober, realistic admission: we will almost certainly see a proliferation of infectious outbreaks in Ukraine and the Balkans, especially as some governments struggle with a continued massive influx of refugees. An intensified reaction from the United States, European Union, and broader international community is imperative.

Degradation of Ukraine’s vaccine reach has been more than a decade in the making. While government guidelines stipulate that children should be vaccinated against 10 infectious diseases, full compliance in the early 2000s dropped to an estimated 70 percent to 80 percent in 2008 and then plummeted below 50 percent in 2013. Polio vaccines reached only 14 percent of infants over the first half of 2014. Last year’s polio outbreak highlighted the system’s deficiencies, revealing political and public health malfeasance featuring dangerous misinformation and multiple political agendas that willfully abandoned the health of Ukrainian children. Only intervention by international organizations and donors, including the U.S. Agency for International Development

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(USAID), brought the situation to light and forced the Ukrainian government to begin to take action.

How did a modern country with aspirations toward European identity fail so dramatically on something as basic as childhood vaccines? The decline of Ukraine's immunization system is fueled primarily by corruption, coupled with ineffective public health communication, gross government neglect of the country's health system, inadequate state financing, and political game playing. Protecting the public's health is low on the priority list.

The modern world can ill afford to allow any country to so thoroughly bungle a public health good as essential as childhood immunization. The international community can take full advantage of the pressure point that matters most: Ukraine's membership in Western institutions. This is also a key moment to demonstrate the utility and potency of the Global Health Security Agenda (GHSA), with Ukraine one of 30 U.S. partner countries designated in November 2015 for priority achievement of GHSA targets. Reformers in Ukraine's health ministry, as well as frontline vaccinators and other health workers, need support. More broadly, Central and Eastern European immunity gaps require more concerted attention, especially in Romania, Kosovo, Moldova, and Bosnia & Herzegovina. It is time for the global health community, as well as donor governments to Ukraine and to others in the region, to ratchet up their diligence and intensity.

The 2015 Outbreak

On August 28, 2015, the World Health Organization (WHO) confirmed that polio had afflicted two children, one age four, the other 10 months, in the Transcarpathian region of Ukraine. Symptom onset occurred on June 30 in one child and July 7 in the other. Both have fully recovered. These were the first cases of polio in Ukraine in 19 years, and the first in the post-Soviet region since 2010, when an outbreak in Tajikistan killed 29 children, paralyzed 480 others, and led to 14 cases in Russia.

The Ukrainian children were infected by circulating vaccine-derived poliovirus (cVDPV) type 1, weakened live polio strains used in oral polio vaccine (OPV) that are secreted from immunized children and mutate, sometimes surviving for months or even years. When vaccination coverage is low, the risk of cVDPV strains emerging from OPV increases, though it's rare: over the last decade, with more than 10 billion doses of OPV administered to 2.5 billion children worldwide, only 21 cVDPV episodes have occurred, causing 622 individual cases.

Given polio's clinical presentation, it was widely feared that these two children were just the start. For every hundred people infected with polio, fewer than one (on average)

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develops the classic neurologic symptoms—meaning that, most certainly, there were hundreds of new infections, at minimum, in Ukraine. The asymptomatic are fine but capable of spreading the virus, although the lack of new cases suggests either that the immediate crisis has been contained, or that there are gaps in surveillance. The European Centre for Disease Control and Prevention (ECDC) estimates that there are 1.5–1.8 million polio-susceptible children in the country.

The logical and expected response would have been an immediate immunization campaign. Vaccines were on the way: in the spring of 2015, the Canadian government had paid for UNICEF to procure and deliver 3.7 million doses of French-manufactured OPV (Sanofi Pasteur). But multiple roadblocks emerged. During transport, the vaccines were thawed and then refrozen upon arrival in Kyiv. This commonplace procedure paralyzed the Ukrainian authorities, ostensibly because the cold chain had been violated. The vials were never opened, however, and WHO’s and the producer’s guidelines had been strictly followed. The use of these vaccines therefore posed no risk whatsoever. The vaccine vial monitors (labels containing heat-sensitive material registering cumulative heat exposure over time) showed that the vaccines were in good condition, and several expert committees conducted independent assessments proving that the vaccines remained safe and potent. WHO and UNICEF provided repeated reassurances that the vaccine remained perfectly safe. Nonetheless, the shipment languished in the capital rather than being delivered to refrigerators at individual vaccination sites.

The biggest fuss was raised by Viktor Serdyuk, president of the so-called Ukrainian Council for Protection of Patients’ Rights and Safety, who commented: “We absolutely must destroy this vaccine. Good or bad, it doesn’t matter. We could pass it along to some poor countries. And then we should vaccinate safely, according to our protocols, after a month, maybe more.” This alleged “patients’ rights” group circulated an online petition to the president and waged an aggressive social media campaign advocating destruction of the vaccines. Some Ukrainian officials tried to deny that there was an outbreak at all. On September 2, the head of the State Epidemiological Service in Transcarpathia, Vladimir Markovic, claimed that local laboratory tests had ruled out polio in both children. The Ministry of Health’s infectious disease head, Olga Golubovska, also reacted with initial skepticism and denial, arguing that “I have no evidence that this is polio . . . talking about a polio outbreak too soon is very dangerous for our country.” The Ukrainian Ministry of Health, however, officially confirmed the outbreak on September 3.

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4 Ukraine remains at risk of losing its polio-free certification because of suboptimal performance of both surveillance and campaign quality.
7 Note, however, that the petition has garnered fewer than 700 signatures: https://petition.president.gov.ua/petition/4185.
Online “experts,” including economists and physicians, flooded digital space with reports that the vaccines were unsafe because of cold chain violations, that the Ministry of Health was putting massive political pressure on officials in Transcarpathia to claim that polio had erupted, that the use of OPV—as a “Third World” vaccine—was inappropriate for Ukraine, that repeat vaccination has unknown and frightening medical consequences, that vaccines should be given only in hospitals (not in schools or other locations), and most alarmingly, that either the faulty vaccine or the inaccurate diagnosis of polio were Russian plots designed to block Ukraine’s entry into the European Union.9

The Response

Against this misinformation, the international community mobilized instantly. UNICEF, WHO, USAID, and Rotary International were already on the ground, doggedly working for years to strengthen all pillars of the country's vaccination system.10 Immediately after the two cases in western Ukraine were confirmed, the WHO Regional Office for Europe deployed an outbreak-response manager, an epidemiologist, and a surveillance adviser to assist the health ministry in its case investigation. A laboratory/surveillance officer and communications adviser soon followed. A weekly Polio Communication Task Force unifying an array of donors with the Ministry of Health and media outlets has attempted to take command of the airwaves, countering false messages in local newspapers and digital media about adverse events following immunization. Extensive workshops have been conducted on contraindications for health professionals. UNICEF and WHO have actively engaged health workers in a training-of-trainers strategy across the country (with the exception of the inaccessible conflict regions in the East), the cornerstone of a massive education campaign designed to combat myths and win trust.

Yet those 3.7 million vaccines still sat in storage for months, the object of fierce behind-the-scenes political combat. The strongest public salvo was an October 9 donors’ press conference featuring Ellyn Ogden, USAID’s coordinator for polio eradication. It went viral on Youtube.11 Ogden did not mince words: “No other country in the world is in such a dire situation, or shows such disregard for protecting children against childhood diseases.” She described Ukraine’s vaccine coverage as worse than that in the poorest of poor countries. This event was a tipping point, with the minister of health deciding at the last minute to attend and offer remarks, the Canadian ambassador occupying a front-row seat, and a follow-up reaching the prime minister. In late September, the logjam finally broke when Bill Gates phoned Ukrainian President Petro Poroshenko directly with a plea for distribution of the UNICEF-procured vaccine. Parallel pressure was applied by the Canadian and U.S. ambassadors, the European Commission, and Margaret Chan, director-general of WHO.

11 See https://www.youtube.com/watch?v=udeCDAV4oC.
The long-awaited vaccination campaign was initially scheduled to cover 3.3 million children under the age of six in two rounds spanning late October–December 2015, followed by a final third round covering nearly 10 million kids up to age 10 in late January/early February 2016. The third round, which had covered 2 million children by mid-February, was extended to the end of that month. The campaign was intended to blanket all children, regardless of prior vaccine status. Not surprisingly, the first round included a hefty degree of catch-up immunization, with deliberate focus on identifying and eliminating backlogs. The European Commission’s Humanitarian Aid and Civil Protection department (ECHO) financed 4.5 million doses (at a cost of 1.3 million euros) for the UNICEF-procured third round.

Eventually over 15 million doses were delivered to almost 5 million children at 24,000 immunization posts across the country. Coverage in the first round was below targets—reported officially at around 64–65 percent, but actually probably closer to 50–55 percent, and lower in Transcarpathia where the two cases broke out—due to parent refusals, excessive contraindications applied by health professionals, and confusion over the WHO/UNICEF-supported strategy to vaccinate all children in the target age group regardless of vaccination status. The second and third rounds were more successful, though still not reaching standard international targets, leaving a probable immunity gap for ongoing or new cVDPV.

Vaccine Coverage and Financing: Pre-2015

Everyone saw this coming. In 2013, The Lancet published a report titled “Ukraine at Risk of Polio Outbreak.”12 WHO led a polio simulation exercise in Ukraine in May of that year. The 2014 report of the Independent Monitoring Board of the Global Polio Eradication Initiative (GPEI) highlighted Ukraine in a section on “the next outbreak of polio,” citing a “perfect storm” of vaccine shortages, growing pools of susceptible children, disintegration of already-weak surveillance, armed conflict in the country’s eastern half, and seemingly disinterested government.13 How did a modern country with aspirations toward European identity fail so dramatically on something as basic as childhood vaccines?

The conflict with Russia is not entirely, or even primarily, to blame. After all, the four-year-old child who contracted polio in 2015 should have been fully vaccinated as an infant, and active hostilities with Russia started only two years back.14 The fault lies instead with gross government neglect of the country’s health system, inadequate state financing for vaccine purchase, corrupt public procurement practices that hike prices to levels far above international norms, and webs of rumor and misinformation leading to widespread vaccine refusal.

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Ukrainian guidelines stipulate that children should be vaccinated against 10 infectious diseases. Full compliance in the early 2000s dropped to an estimated 70–80 percent in 2008 and then plummeted below 50 percent in 2013. Polio vaccines reached only 14 percent of infants over the first half of 2014.

Part of the problem is inadequate state financing. In variation with international best practice, there has been no dedicated national budget line item for vaccines since 2011.15 While the national law on public procurement clearly specifies necessary amounts, funds have consistently been limited by budget availability. The strategic value of vaccines has clearly not been elevated to national priority. In 2013, the health ministry said that the state budget was covering only about 65 percent of its vaccination needs—US$ 38 million of a requested US$ 58 million.16 In mid-2014, Dorit Nitzan, the WHO representative in Ukraine, warned that there were no vaccines available across the country for anything, not just polio.17 An international appeal for $14 million at that point to purchase vaccines produced only $40,000 in response, and the health ministry confirmed later that summer that only about 30 percent of necessary funding was forthcoming from the government. In the Transcarpathian region where the two children were paralyzed in 2015, the head of the regional clinical infectious disease hospital reported that only 15 percent of needed vaccines had been supplied that year.18 Observers of the current polio vaccination rounds note that, even in facilities where OPV is now plentiful, other childhood vaccines (measles/mumps/rubella, diphtheria/pertussis/typhoid, tuberculosis) remain completely out of stock.

Mistiming of financing further impacts supply. Annual purchasing is unable to account for the specific nature of the vaccine market, where manufacturers would prefer multiyear forecasting and contracting (particularly for a relatively small market). The very late release of budget funds each year (sometimes in November) puts procurement units under pressure to complete purchases within just a few months; the Ministry of Health is not legally permitted to start a tender before the Ministry of Finance has released the money, or to conduct multiyear tenders. Gap-bridging legislation allows carryover into the first quarter of the following year, but that 25 percent buffer stock has frequently been used before the following procurement round is completed. In addition, the immunization schedule is set by a panel of medical experts who do not take into account available funding or vaccine cost.

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Parent Refusal

Even if vaccines were widely available, parent hesitation would limit coverage. Current confusion is directly traceable to May 2008 and the death of Anton Tyschenko, a 17-year-old in the Donetsk region who had just been vaccinated for measles and rubella. Health experts report that Tyschenko died from bacterial meningitis, completely unrelated to the vaccine, but media coverage of the event and contradictory government statements sowed distrust among parents and even health professionals. Over a hundred people, mostly children, were hospitalized over the next few days with headaches, fevers, sore throats, and other symptoms wrongly attributed to vaccines. Television, newspaper, and social media reporting was wildly irresponsible. Protestors stormed the doors of the Ministry of Health. Legal aid nongovernmental organizations reported an immediate spike in the number of parents seeking assistance in circumventing vaccine requirements (by law, children cannot be enrolled in public schools without a certificate of immunization), and the Ministry of Health called a moratorium on measles and rubella vaccine distribution.

Perhaps most importantly, the chief sanitary inspector of the country, Professor Mykola Prodanchuk, was fired. He had arranged for WHO/UNICEF to donate the vaccine as part of a one-time deal for delivery without prior registration in Ukraine. This contradicted a 2006 regulation requiring vaccines to be officially registered by country authorities prior to import and use, opening the door to widespread media accusations of tampering, conspiracy, and high-level corruption.

Almost a decade later, parental attitudes still vary widely. After the 2015 outbreak, some families immediately descended on local clinics demanding to get their children protected. Others support vaccination in principle but fear that locally available vaccines are unsafe. A 2014 UNICEF/WHO survey showed that only 18 percent of mothers thought that polio was a dangerous disease, and 27 percent knew it could cause paralysis. However, almost three-quarters had a positive attitude toward vaccination in general—a dramatic change from 28 percent in 2008—and only 13 percent were actively opposed to vaccination.

Confusion among Vaccinators

Recent years have left Ukraine’s health workers confused about contraindications for vaccination, a situation exacerbated by the country’s incredibly complicated official guidelines. Some see coughing, sneezing, or even a mild fever as reason for delay. During the current rounds of immunization, health professionals have widely assumed that seasonal coughs and colds are sufficient reason to defer vaccine. Local reports note that such temporary contraindications have reduced coverage by 5–10 percent.

More broadly, medical professionals in Ukraine have mixed feelings toward vaccines. They recall fondly the perceived safety and predictability of a Soviet-era environment where efficacy and quality were guaranteed by a strong state apparatus. Now, vaccination campaigns are associated with black-market activity, with decisionmakers suspected of prioritizing kickbacks from drug companies over quality standards. Biomedical products manufactured in India or other “Third World” countries are seen as uniformly unacceptable. Ukrainian physicians also doubt the applicability of WHO guidelines and expertise in what they perceive as a distinct Ukrainian context, doubting vaccine quality in the absence of specific registration and testing in Ukraine, and worrying about locally unique allergens and poorly understood lingering impacts from Chernobyl. Some take these concerns to the next level, accusing WHO and other international agencies of viewing Ukraine as little more than an immunization barrier preventing the flow of infection from East to West.

Long-standing Ukrainian medical policies further complicate the problem. If a child dies from any cause within 30 days of receiving a vaccine, the vaccine itself is listed as a cause of death until an investigation is completed. During the investigation period, the license of the health professional who administered the vaccine can be suspended; the doctor who gave the measles vaccine to the teenager who died in 2008, as well as the deputy health minister at the time, were imprisoned. Not surprisingly, these rules create a chilling climate even for vaccinators who want to fulfill their responsibilities well; they are a harsh disincentive for clinicians to do their jobs.

Acting in self-preservation, Ukrainian pediatricians are known to practice double bookkeeping. If a physician judges a child to be too weak or ill to “withstand” a vaccine, she will recommend delay to the parents—but nevertheless, under pressure from local public health departments insisting on 100 percent compliance, report complete coverage. Later, she will circle back to the ones that were missed. As a result, there can be two sets of records: the one the doctor keeps for herself, and the one with the data she sends up the reporting chain. The physicians fear multiple side effects and complications from any other course of medical action, as well as administrative sanction for failing to contribute to excellent official statistics. These practices cast a long shadow over official vaccine coverage data and minimize the likelihood that challenges will be accurately identified and addressed.

The Main Issue: Corruption in Public Procurement

The most potent source of confusion and resistance stems from organizations that have long profited handsomely from exclusive control over procurement of vaccines and other medications. These businesses, led or manipulated by oligarchs with tight, high-

22 Ibid., 445.
level political connections, have an interest in discrediting vaccines purchased by international organizations.23

This corruption takes multiple forms: staging tenders among multiple companies controlled by one actual owner; collusion between independent companies to coordinate bids and increase prices; use of shell companies to purchase drugs overseas and sell them to the Ministry of Health at artificially high prices; and use of the Register of Bulk Release Prices, which should serve as a regulator, to overestimate tender prices by taking advantage of differential requirements for foreign and domestic drugs.24 Domestic drug manufacturers are omitted from this game; although there are 116 registered pharmaceutical companies in Ukraine, they receive a small minority of government contracts, with the business going instead to foreign manufacturers. These foreign companies sell medicines and vaccines to intermediary shell companies that are familiar with the Ukrainian business and public procurement environment (and that can prepare bids and package labels in Ukrainian). Over time, it has become clear that the international pharmaceutical industry shies away from direct participation in Ukrainian tenders precisely because of the reputational risk of association with corrupt practices. Independent investigations have revealed that the owners or managers of many of these shell companies are former university classmates, ties that are also shared with Ministry of Health officials and members of parliament. Ukraine’s rank of 130th out of 183 countries on the 2015 Transparency International Corruption Perception Index makes this no surprise: the health sector is the rule, not the exception.

The bottom line is that scarce public resources are further stretched to cover artificially inflated costs. According to investigative NGOs, the “pharmaceutical mafia” rigs drug prices to a level sometimes more than 20 times international norms: clarithromycin for US$ 196 a dose (compared to US$ 8 on Western markets), moxifloxacin for US$ 301 (compared to US$ 45), and capreomycin for US$ 14 (compared to US$ 4.50).25 Even Ministry of Health documents confirm that vaccines are routinely procured for as much as three times the prices paid by UNICEF.

The profits accrue almost exclusively to import and bidding specialists who do not themselves manufacture the drugs, but who benefit handsomely from pre-engineered markups. Several of them position themselves as manufacturers, but their “production” consists of repackaging drugs into smaller boxes. According to a detailed and exhaustively researched report published by the NGO “Anticorruption Action Center,” six companies divided all procurement in 2014 for medications to treat tuberculosis, HIV/AIDS, hepatitis, and cancer. A single individual controls four of those six companies.

For some tenders, the bid documents submitted by these alleged “competitors” all contained the same grammatical and spelling errors, hinting strongly that they were all prepared by the same person. Using their political connections, they cut deals resulting in tens of millions of dollars’ worth of overpayments, and in some cases—including for key antiretroviral drugs in 2014—take prepayment but never deliver the product. “Vector Pharma” received over 52 million hryvnias (about $1.5 million at the time) in prepayment in December 2014 for drugs that were not delivered as of the following May, and then sued the government for additional money to compensate them for exchange rate movements that devalued the original payment—prolonging even further their window of nondelivery. In the meantime, 30,000 HIV/AIDS patients went without treatment.

Corrupt drug-company interests have strong ties to—and sometimes a controlling interest in—key media outlets, contributing to misleading and sensationalist rhetoric around vaccines and deliberately confusing both health professionals and the public. Social media and shell company-financed Internet “trolls” regularly hype rumors about alleged vaccine toxicity, the existence of conspiracies masking the “truth” that there was no polio outbreak at all, and the diabolical international plot underlying the entire outbreak storyline.

Grand resets of Ukraine’s health system, explicitly aimed at rooting out corruption, have become routine. A steady stream of high-level ministers resigning or being sacked under the shadow of corruption has been flowing for years, as have repeated commitments and recommittments to bringing the situation under control. In 2009, then-President Viktor Yushchenko commissioned a specialist in organized crime to lead an internal investigation specifically into health sector fraud. The resulting report focused on the now-familiar pattern: create an off-shore shell company, find allies among corrupt officials, win state tenders at artificially inflated prices, and pocket the proceeds. Before the document could be published, however, its primary author’s car was destroyed by a grenade in central Kyiv, his life saved only by extensive surgery in Israel. The report was never officially published, though alleged versions of it leaked online.26

After the Maidan Revolution, Oleg Musy—the physician who heroically coordinated medical volunteers during the months of protest—was appointed as a reformist health minister. After only a few months, however, Dr. Musy and his deputy Ruslan Salyutin were dismissed for “failure to ensure tender procurements of required medicines.”27 According to some interpretations, Musy called a halt to drug purchases while trying to root out corrupt practices, a strategy that brought him under fire from patients’ advocacy groups (that wanted to maintain a flow of available medicines regardless of procurement schemes and kickbacks) and government officials (who wanted no brakes on their gravy train). By this line of argument, Musy put up a valiant front as an

anticorruption crusader, but powerful entrenched interests prevailed. Others view Musy’s term of office in a considerably less flattering light.

Musy’s replacement, Alexander Kvitashvili (a former minister of health in Georgia), was appointed in December 2014. While Kvitashvili brought a mixed track record to the table—as Georgian health minister, he presided over a privatization initiative that resulted in out-of-pocket payments constituting over 70 percent of health expenditures in 2009—hopes were initially high. As an outsider, one of several imported by the post-Maidan leadership, he might have the independence and detachment to cut through multiple layers of corruption and bureaucracy. But that outsider status also leaves him without the know-how and connections to navigate the labyrinth of insider deals and networks. He and his deputy immediately pushed to allow international organizations to procure some essential medicines for the country, but he quickly became so frustrated—not a single bill he initially submitted to parliament was passed—that he tendered his resignation on July 2, 2015. It was refused.

The social policy provisions of the new Ukrainian government’s official reform program (the Coalition Agreement of Parliament) for 2015–2016 focused primarily on pharmaceuticals, as did the Program of the Cabinet of Ministers for 2015. These documents call explicitly for transfer of public procurement responsibility through the health ministry to other structures, including international organizations, and for vaccines specifically to be bought by the United Nations agencies. This strategy would provide a “grace period” for WHO and other partners to support the ministry in developing a modernized National Pharmaceutical Policy and tools to execute it.

Ukraine’s National Health Reform Strategy 2015–2020, developed through a 12-member Health Strategic Advisory Group throughout 2014–2015, also bore Kvitashvili’s promise for procurement reform. It advocates outsourcing of pharmaceutical procurement to international organizations, and in the long run a complete purchaser-provider split, with centralized bulk negotiations and purchases to be handled by a semiautonomous, publicly governed National Health Financing Agency.

Deregulation is to lead to direct contracts with manufacturers—cutting out the middleman—and reciprocity of registration of medicines with the European Union, United States, Canada, Australia, and Japan. These commitments are central to the reform program intended to move Ukraine toward membership in major European institutions, highlighted repeatedly in public statements by President Poroshenko, and they led to the passage of public laws 2150 and 2151 in March 2015 allowing the government, through the year 2019, to procure medicine and vaccines through international organizations. These laws also call for simplified registration procedures, relaxed labeling and other importation requirements, and exemption for pharmaceutical

products from the country’s 7 percent value-added tax and 5 percent import surcharge when procured by international organizations. Kvitashvili called the laws a “litmus test” that would determine whether the government, particularly the legislative branch, was ready to support a genuine reform process.

In August 2015, Kvitashvili announced that the United Nations would be handling some public pharmaceutical procurement in Ukraine, with other medicines to be procured through Crown Agents of the UK and other entities. Ukrainian manufacturers were invited to participate as bidders or suppliers, but the United Nations is to be principally responsible for direct procurement support. This proposal was to cover not only vaccines, but also drugs for HIV, tuberculosis, and other needs, as well as some medical technologies. Throughout the fall and winter of 2015, however, the necessary administrative procedures were not put in place, and not a single contract with international organizations was signed. It is widely assumed that vested interests continued to block movement forward. Although anticorruption NGOs have continued to lobby for policy changes and actively ferret out abuse, cooperation between civil society institutions remains weak, and the media are only beginning to jump on the investigative reporting bandwagon.

Finally, in early February 2016, Deputy Health Minister Ihor Perehinets announced (at an event organized by the American Chamber of Commerce in Ukraine) that all regular tender procedures had been terminated, and that the United Nations and Crown Agents would supply 31 of 166 ordered drugs over the subsequent three weeks. On March 1, Stop Polio Ukraine confirmed that vaccines procured on long-term contracts by UN agencies would be delivered by the end of the month. Worrisome signs continue to emerge, however, including a March 2016 report from WHO that the standard coalition of vested interests is blocking Sanofi Pasteur’s application for a license to supply bivalent vaccine (a newer vaccine type that eliminates the risk of vaccine-derived polio) prequalified by UNICEF. It remains unclear whether the middlemen and their allies have been successfully bypassed.

Beyond Western Ukraine

The contested regions of eastern Ukraine (Donetsk and Luhansk) are essentially a black box when it comes to immunization activities. Local authorities there accept nothing from the Kyiv government. They claim to have completed three recent rounds of polio

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vaccination using OPV from Russia, and reports indicate that coverage is relatively high. Little is known, however, about vaccine quality, integrity of the cold chain, coverage among large numbers of internally displaced persons, and other important factors. Mass population movements have separated thousands of people from their vaccination records, and large numbers of health care workers have fled or died. Water supplies are at risk for almost 2 million people. If an infectious disease outbreak were to appear in those regions, that information may not see daylight in a timely way.  

Ukraine’s vaccine situation is not unique in the post-socialist space. While some governments have prioritized mandatory vaccine coverage (Croatia has been particularly successful), others display disturbingly familiar patterns. A 2014 UN assessment of the health sector in Kosovo, for example, produced virtually identical findings to Ukraine’s: corruption at all stages of the supply chain. In 2012, the general secretary of the Kosovo Ministry of Health and its directors of Quality Assurance, Pharmacy, and Procurement were arrested for abuse of their positions, with the first two eventually convicted. Apparently key lessons were not learned, as the director of the Central Pharmacy at the Kosovo University Clinical Center was charged with similar violations two years later. 

Broadly, many of the Central and East European countries have a cultural bias toward procuring from Western European suppliers, but those manufacturers are increasingly moving away from production of cheaper vaccines and toward more expensive, higher-profit-margin combination vaccines. The overall market trend is now toward developing country manufacturing, especially India. Convincing East European governments, medical communities, and public opinion that Indian product fully meets international standards is a challenge; it’s an image thing. As a result, these countries can no longer afford the vaccine they’ve always bought, and they represent such a small market that there’s little incentive for the Western European producers to make more. 

Given the location of Ukraine’s recent outbreak—the western-most part of the country, bordering Hungary, Poland, Romania, and Slovakia—concerns have mounted over the potential for further transmission into unvaccinated pockets of the European Union. The two children diagnosed with polio in 2015 are geographically closer to eight European capitals than to Kyiv. The tide of refugees fleeing conflict in Syria and Afghanistan heightens these worries. The European Centers for Disease Control places Europe overall at low risk of polio transmission, but cites Romania and Bosnia & Herzegovina as countries with dangerously low vaccination coverage, and even Austria (with 83 percent coverage) as a place where herd immunity might be insufficient to prevent sustained transmission. Particular subgroups may be at risk even in the heart of well-vaccinated

Western and Central Europe: Roma, migrants, other disadvantaged groups, and those with religious or philosophical beliefs opposing vaccination.\(^{38}\) Coverage estimates may be questionable because of exclusion of these groups from the denominator; if children are not registered with health services or lack other documentation, they may remain unvaccinated and uncaptured by official statistics.

### Moving Forward: Smart Pressure and Sustained Support

Vaccine coverage is a key reputational and human rights issue. Not just since the open conflict with Russia, but for years earlier, the Ukrainian government has set aside its role as a provider of universal health care and guarantor of health security. Now is the time for the international community to ramp up support for true Ukrainian reformers at all levels, and pressure on everyone else. Until public procurement falls into a stable routine of international procurement and genuinely competitive tenders for local suppliers, the danger of backslide persists. A December 2015 poll indicated that only 9 percent of the population trusts the government, and 17 percent the president.\(^{39}\) A trickle-down effect—where nobody trusts anybody in authority—leads directly to vaccine refusal. The international community can take full advantage of the pressure point that matters most: Ukraine’s membership in Western institutions. Not just the EU, but Ukraine’s neighbors potentially impacted by disease outbreaks—Poland, Hungary, Romania, Slovakia, the Czech Republic—could speak up as well. Ukraine needs political and financial support; this is the most exploitable leverage.

Indeed, this is a key moment to demonstrate the utility and potency of the Global Health Security Agenda (GHSA). Ukraine is one of 30 U.S. partner countries designated in November 2015 for priority achievement of GHSA targets, with a minimum US\$ one billion investment pledged to make it happen.\(^{40}\) A GHSA external country assessment conducted in Ukraine that same month accurately pinpoints the shortcomings surrounding vaccines and infectious disease control more broadly: challenges with licensing and procurement of essential vaccines and other medical supplies, the need for structural and legislative reform, absence of an effective system for forecasting of epidemics and biological risks, cumbersome and time-consuming paper-based reporting, widespread antivaccine sentiment, chronic underfunding, irresponsible media, and lack of trust in health care providers.\(^{41}\) Its primary recommendations are straightforward: UN and GHSA advocacy to support international vaccine procurement of high-quality vaccine at reasonable prices, and sweeping change in the domestic accreditation,

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licensing, and procurement system. Achievement of high immunization coverage is billed as the “top priority.” The GHSA framework and commitments provide the channel through which U.S. leverage toward this goal can be applied; the United States, hand in hand with the Ukrainian government and other partners, is developing a plan for Ukraine to meet GHSA and full Joint External Evaluation targets leading up to the Netherlands’ hosting of the third high-level GHSA event in autumn 2016.

Within Ukraine’s health sector, the minister of health, although not in a politically stable position, is trying to do the right thing and to do it right, and the deputy minister hails straight from the immunization community. But the health bench isn’t deep. Ukraine’s extreme political volatility means that these champions may not be in place indefinitely, and therefore the need for political commitment lies primarily elsewhere—higher—on the food chain, in the legislative and executive branches. Ideally, the parliament and prime minister, and even the president, should become so committed to immunization that they independently would apply pressure should the health ministry show insufficient commitment.

The Ministry of Health also needs more personnel to support the cause. The ministry’s immunization department has for years consisted of just one staff member. Although that position has been dependably occupied by highly competent and qualified individuals, building a solid team of professionals could leave the institution less dependent on the capacity of just one person.

Down the chain, vaccinators also need more support. Overall, these are dedicated professionals, but their decisionmaking is hampered by fear of prosecution. There remains no protection for health workers in the wake of adverse events or even rumors of adverse events. The legal case surrounding the 2008 measles vaccines remains open, and the current deputy health minister is still under investigation for the spring 2015 thawed/refrozen Canadian-purchased vaccine. A review system for adverse events is under development, but in the meantime, staff on the ground are highly vulnerable. They deserve better protection.

More sophisticated media management is also key. The rot in public procurement is deep and pervasive, and it cannot be excised overnight. Control over the message presented to the public must be firm and consistent over an extended period of time, requiring smart collaborations with media partners across multiple levels and platforms: print, broadcast, and most importantly, digital. Western media specialists have considerable expertise to share in this area, as do WHO and UNICEF.

Not just Ukraine, but also Romania, Kosovo, Moldova, and Bosnia & Herzegovina merit particular attention. The underlying causes of low vaccine coverage vary—in Bosnia, for example, the issue is overall political engagement across three different governments—but the potential consequences are the same. Several of these countries, especially in the Balkans, would benefit from systematic review of the global vaccine market to become aware of the full range of alternative products, and could experiment with joint procurement, multiyear tenders, and streamlining of their tender processes and legislation to allow more flexibility. More broadly, across Europe there are pockets of
unvaccinated children among Roma and other ethnic and religious minority groups, some immigrants and refugees unable to assimilate into local health services (and for whom no services exist in their languages), and vaccine refusers. Finding and plugging these immunity gaps has been a key message of the Certification Commission, deserving of higher priority across the European Union.

Ukraine’s two cases of polio present a potential launch pad for meaningful change. Ukraine has a window of opportunity to undertake reforms, and to get them right. WHO and UNICEF are a strong, outspoken presence, and their sustained efforts pave the most likely path toward an improved overall immunization climate. Bilateral donors are, for the most part, on board, but their political pressure specifically on polio could be escalated. The technical capacity and vaccines are in place; Ukraine now needs sustained political will and commitment at the highest levels. This Ukrainian government was launched on a platform of reform. Although that road remains almost unnavigably rocky in most areas, vaccine procurement is the straightest possible line between real change and saved lives. If the Ukrainian president or prime minister were to make unambiguous statements about the risk of polio and the importance of vaccination, the lives of health professionals would ease considerably and the tolerance of corruption in this specific area might abate. Vice President Biden has reportedly communicated with Ukrainian officials dozens of times over the last year; even one public mention of polio would have made an impact. Behind-the-scenes pressure is crucial, of course, but in this context the message needs to reach a more expansive and varied target audience.

We were surprised by Ebola. We were surprised by Zika. Everyone hopes we are in the endgame for polio, but it would be imprudent not to prepare for further surprises: there is good reason to be nervous that the violent widening disorder in the Middle East and North Africa, spurring massive refugee flows into Europe and elsewhere, is going to trigger new outbreaks. It is time for the global health community, as well as donor governments to Ukraine and to others in the region, to ratchet up their diligence and intensity. We need to pay far higher attention and get engaged now. It would be a tragedy not to turn Ukraine’s polio crisis into a meaningful opportunity.
Polio in Ukraine

Crisis, Challenge, and Opportunity

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