



Session Report: Integrating AMR, Digital Transformation and Behavioral Science in Cancer Care

Parallel Session at the UICC World Cancer Congress 2026
Theme 2: Cancer Research and Progress – No-one Left Behind
Time and date: 12:20-13:25, September 24, 2026
Venue: Hong Kong Convention and Exhibition Centre, Hong Kong
Organizer: Asia Cancer Forum (ACF)
Supporter: UICC Asia Regional Office (UICC-ARO)

1. Introduction

Antimicrobial resistance (AMR) is reshaping cancer care. This session, supported by UICC Asia Regional Office (UICC-ARO) sought to explore how infection control, digital innovation and behavioral science can make treatment safer, smarter and more equitable.

The session was moderated by Dr. Masaru Iwasaki (Board Director, Asia Cancer Forum) and brought together four speakers representing a global health agency, a comprehensive cancer center, civil society and the private sector. Taken together, their presentations moved from global mandates and national planning, through the clinical realities of resistance at the bedside and the equity gap between tertiary and rural settings, to digital solutions now being deployed in war-affected Ukraine.

2. Opening Remarks

Dr. Masaru Iwasaki (Board Director, Asia Cancer Forum) welcomed participants and explained that the session would address infection control in patients with cancer, with a particular focus on AMR. AMR threatens all patients, but those with cancer are especially vulnerable, and infection control is essential to their care. The session was organized by the Asia Cancer Forum (ACF), founded by the late Professor Hideyuki Akaza, whose motto, “No one left behind,” remains the guiding principle of the organization. Alongside infection control itself, the session would consider the value of digital transformation and behavioral science as countermeasures.

Dr. Norie Kawahara (Representative Director, Asia Cancer Forum) noted that ACF works to ensure that no one is left behind, an effort it continues together with the National Cancer Society of Malaysia (NCSM) and UICC. The session grew out of a lecture given in 2025 in the University of Tokyo series, which asked how AMR affects cancer care. AMR begins with biology, but its effects reach across the whole of society, showing who can receive safe care and who is left behind. In this sense, AMR can be said to be a reflection of society itself. This is the spirit of the Cross-boundary Cancer Studies lecture series, which ACF developed with Dr. Hideyuki Akaza at the University of Tokyo around a single guiding idea: cancer is a mirror of the social realities around it, and understanding it requires connecting medicine, society and culture.

With support from UICC Asia Regional Office (UICC-ARO), the program, now in its sixteenth year, links international students at the University of Tokyo with peers across Asia, so that learning can move from the classroom into society and lectures can turn into action.

Dr. Kawahara closed by sharing a message from Dr. Tetsuo Noda, Director of UICC-ARO, who expressed his delight that the Cross-Boundary Cancer Studies lecture series supported by UICC-ARO had led to the day's discussion, emphasized that addressing AMR is vital to protecting cancer patients worldwide, and encouraged participants to build on the dialogue in this session for future collaboration.

3. AMR and Cancer Care: From global mandates to national plans and the bedside through collaboration

André Ilbawi, MD

Team Lead, Cancer

World Health Organization

Dr. Ilbawi opened with the two questions that framed his talk. With so many competing priorities on the global cancer agenda, why should the cancer community focus on AMR? And even if its relevance is accepted, what can any single stakeholder actually do? The answer to the first question is clearly that the cancer community belongs in the AMR dialogue. The second question was where he noted that he intended to spend most of his presentation, since awareness of an important agenda is of little value unless it leads to something participants can take away and do differently in their day-to-day work.

The starting point for any global health topic is whether a global commitment exists, and AMR is among the most firmly established priorities that governments have set in the past decade. The adoption of the Global Action Plan on AMR by the World Health Assembly in 2015 was followed by UN High-level Meetings and political declarations in 2016 and 2024, the latter setting targets for 2030, and by an updated Global Action Plan adopted at WHA79 in 2026, with the next High-level Meeting due in 2029. Few agendas can point to such a sequence of resolutions and political commitments. Governments clearly care about AMR, and that is a strong foundation; the question is how the agenda translates at the national level and at the clinical interface.

At the national level, the picture is less encouraging. The cancer community is getting better at developing policies but not at implementing them, and national cancer control plans (NCCPs) are often underfunded and insufficiently costed. Their intersection with AMR has gone largely unnoticed: of 98 NCCPs recently reviewed by the International Cancer Control Partnership (ICCP) in collaboration with WHO and others, only two referenced AMR.

The same gap appears on the AMR side. Under the Global Action Plan, countries are encouraged to develop national action plans (NAPs) and are measured in part on whether these are funded, yet only 11% of countries reported national budget funding for their AMR action plan in 2023, against a target of at least 60% by 2030. There is a significant implementation gap between what is agreed at global meetings, what clinicians recognize as relevant, and what policymakers have adopted as national priorities.



Figure 1. Global targets are agreed, but national plans remain unfunded and clinical services unreached

The health impact of AMR is not a plausible future emergency but a current crisis. Some 4.71 million deaths were associated with bacterial AMR in 2021, with directly attributable deaths estimated at between 1.5 and 1.8 million, more than HIV and malaria, each year. Yet AMR occupies a very different position in the global health architecture, because it is difficult to see where it fits within a policy agenda. Data in cancer are limited, but infection is a leading cause of death among people being treated for cancer, with some reports placing it second. Facility-level data, which account for most of the available evidence, show that a large proportion of bloodstream infections and sepsis cases involve organisms resistant to first-line therapy.

Leading cancer centers are beginning to recognize the problem, paying closer attention to antibiograms and to the frequency of multidrug-resistant infections, and this is an important leadership function. However, cancer centers typically treat only 10–20% of people with cancer, in both high-income countries and in most low- and middle-income countries (LMICs) alike. Visibility is therefore also needed across cancer networks and in hospitals beyond capital cities, where multidrug-resistant organisms are suspected to be emerging most frequently.

Grading the cancer community's performance on AMR, Dr. Ilbawi judged it to be doing well on global leadership and at cancer centers, but the policy ecosystem is deficient.

Beyond the national health plan and the cancer control plan, AMR is therefore perhaps one of the most important policy entry points for the cancer community. Alignment is already emerging at the facility level, on laboratory networks, infection prevention and control (IPC) and stewardship, with cancer centers developing guidelines not only for cancer treatment but also for common toxicities such as neutropenic fever.

What is missing is system-level integration. Terms such as “policy environment” may sound abstract, but in practice they carry great weight because they are tied to budgets. Since the UN political declaration and the Global Action Plan call on governments to budget for AMR, the cancer community needs to be part of that conversation, because

the outcome will directly affect the care of people with cancer. Planned jointly, two under-funded plans can become a single delivery pathway.

Nor does the cancer community have to act alone. AMR would not have appeared on the agenda of a World Cancer Congress ten or twenty years ago, and UICC and UICC-ARO deserve credit for bringing it forward. Networks are emerging, from the Global Antibiotic Research and Development Partnership (GARDP) to UICC's AMR and Cancer Taskforce, of which the WHO is a member.

Dr. Ilbawi acknowledged that the agenda still struggles to gain traction, partly because the community has not communicated well why it matters and has not been clear about what it is asking people to take on. Strengthening networks and coalitions is essential, since no individual provider or organization can move the agenda alone.

Dr. Ilbawi then proposed five concrete actions, inviting the audience to say which the community should prioritize, since not all five can be pursued at once.

The first is surveillance: building laboratory infrastructure that includes microbiology alongside pathology and laboratory medicine. This is a clear win-win, with targets in cancer plans, AMR plans and at the global level, and it also serves pandemic preparedness and response, making it perhaps the most natural entry point for dialogue between the two communities.

The second is IPC, implementing core components in oncology facilities and across healthcare more broadly, and advocating for investment in hygiene, water and sanitation at the community level.

The third is stewardship, ensuring that all cancer centers and treating hospitals have guidelines on appropriate antimicrobial use.

The fourth is access and research and development. Global investment in cancer research and innovation is on the order of US\$50–100 billion, compared with hundreds of millions of dollars for AMR; a co-developed research agenda could meet the needs of both communities and incentivize domestic financing for innovation and the stewardship of new products.

The fifth is governance and financing: securing a seat at the table when both NCCPs and AMR national action plans are developed, and working together on financing, indicators, joint oversight and accountability.

Leaving with greater awareness of AMR is not enough. Dr. Ilbawi urged participants to approach UICC or WHO with the area in which they see a win, warning that otherwise the community will still be holding advocacy-oriented discussions ten years from now, by which time the situation may be irreversible. Ultimately, the reason for acting is the patients: people diagnosed with cancer who suffer a catastrophic end to their lives through sepsis, rather than going home to their loved ones, because they did not receive the right treatment at the right time.

Conclusion: five actions and targets for improved national planning

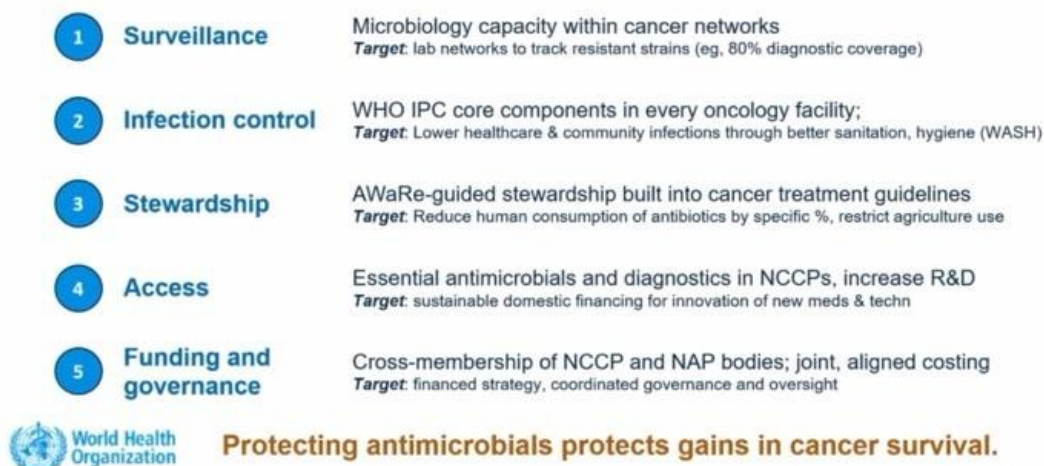


Figure 2. Five actions and targets for improved national planning

4. AMR at the Bedside: Presenting the Clinical Realities and Practical Challenges of AMR in Cancer Care - Five Years of Surveillance, Implementation and Research at King Hussein Cancer Center

Asem H Mansour

CEO & Director General

King Hussein Cancer Center

Dr. Mansour explained that he had come to AMR from a specialty far removed from it. Before becoming Director General of King Hussein Cancer Center (KHCC) in Amman, Jordan, he had believed that cancer care was essentially about precise diagnosis, evidence-based treatment and good follow-up. The clinical, financial and operational reports that reached him in his new role, however, showed that the center was losing patients and money to microorganisms, and that patients sometimes died of infection even when everything else had been done well.

Cancer treatment creates a uniquely vulnerable ecology. Patients receive frequent courses of broad-spectrum antibiotics for prophylaxis and treatment; chemotherapy breaks down the mucosal barriers and gut flora that protect them; hematopoietic stem cell transplantation (HSCT), CAR-T cell therapy and novel targeted agents cause profound immunosuppression; and neutropenia turns harmless colonization into invasive infection. Central lines, repeated ICU admissions and prolonged stays add further risk. When antibiotics stop working, the harm does not stay in one place but runs across the whole cancer care pathway.

In Jordan, this clinical vulnerability intersects with a regional one, shaped by instability, cross-border conflict and patients arriving from outside the country for care, and with system constraints that include limited access to reserve antibiotics, fragmented or absent antibiogram data, and limited access to rapid genotyping and diagnostics. Local antibiograms are therefore essential, but a regional learning network is also needed to keep empirical therapy current.

Five years of KHCC transplant microbiology data illustrate the scale of the problem. Bloodstream infection accounted for nearly half (47%) of infections among HSCT

recipients, half of them gram-negative, and 71% of *E. coli* isolates were ESBL-producing. The ecology is dominated by resistant gram-negative organisms, the most dangerous pathogens in immunocompromised, neutropenic hosts, and this calls for empirical therapy based on local data rather than textbooks, together with rapid diagnostics and prevention of gut-derived infection. The human cost is high. Among allogeneic transplant recipients, one-year overall survival was 46.5% in patients with carbapenem-resistant organism (CRO) infection, compared with 72.7% in matched controls, and non-relapse mortality was around two and a half times higher (34.9% vs. 14.1%; adjusted hazard ratio 2.06).

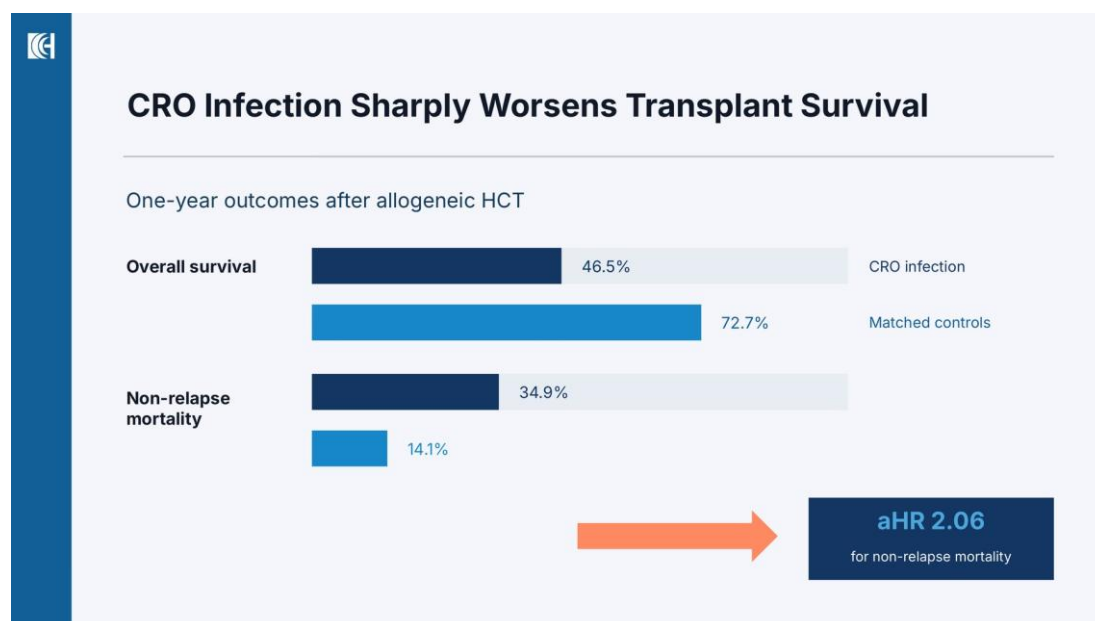


Figure 3. CRO infection sharply worsens survival after allogeneic transplantation at KHCC

Surveillance data, in other words, must be carried from the laboratory and pharmacy to the bedside. Asking whether anyone was really looking at culture results and acting on them, KHCC established a pharmacist-led antimicrobial stewardship program. Pharmacists were trained in infection control, antibiograms, antibiotics and communication, and a multidisciplinary team was then built around them with nursing staff, infection control personnel and infectious disease (ID) physicians. A review of 661 cultures from 504 ambulatory patients found that 26% required a change in antimicrobial therapy, and treating physicians accepted 86% of the team's recommendations. Interventions ranged from stopping antibiotics and switching to an active agent to de-escalation and dose adjustment to reduce toxicity.

Even optimal therapy has its limits. With a state-of-the-art combination of ceftazidime–avibactam plus aztreonam for carbapenem-resistant Enterobacterales infection, treatment success reached 89%, yet infection-related mortality remained at 11%. Access to active antibiotics must therefore be paired with rapid, accurate diagnostics and risk stratification.

The financial cost, which is rarely discussed, is also substantial: resistant gram-negative infections carry hospital costs around 29% higher than susceptible ones, and in a middle-income setting a carbapenem-resistant infection episode can cost nearly four times as much as a non-resistant one.

KHCC began its response with its own people, educating staff and publishing its data on stewardship and resistance, and then extended this beyond the hospital walls

by engaging the public on appropriate antibiotic use, including through social media. Its stewardship program was designed to meet and exceed the U.S. CDC Core Elements while being tailored to a cancer center, since a program borrowed from a general hospital cannot simply be applied to complex, immunocompromised patients. Its pillars include leadership commitment; accountability, with ID physicians and pharmacists responsible for following up cultures; pharmacist expertise in antibiotics and stewardship; prospective audit with feedback to the bedside; tracking of deviations and trends; regular reporting to physicians and to the authorities; and education, including review of missed cases to prevent recurrence.

KHCC has recently taken its first steps toward using AI to make stewardship real-time rather than retrospective, embedding it in continuous clinical decision-making. AI-supported surveillance integrates pharmacy, census and location data, standardized according to WHO methodology, to monitor trends in antibiotic use, especially of high-alert agents, and to trigger review where unusual patterns appear. This is paired with local resistance intelligence in the form of an institutional antibiogram stratified by patient population and unit, integrated into clinical practice guidelines and linked to rapid diagnostics.

The result has been faster optimization of therapy, improved guideline adherence and greater accountability for antimicrobial use. Where publishing the annual antibiogram once took a year, live dashboards now make it available almost in real time, alongside blood culture contamination rates and MDR and XDR trends that also feed into awareness campaigns and educational content.

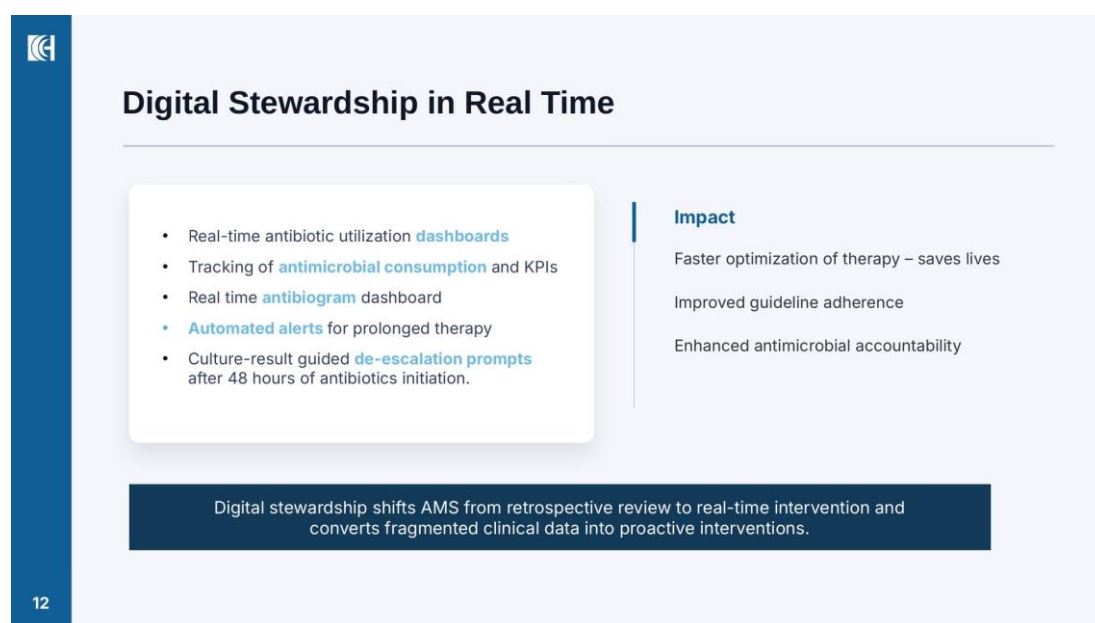


Figure 4. Digital stewardship at KHCC: from retrospective review to real-time intervention

Dr. Mansour concluded with four messages: 1) Resistance now shapes outcomes in cancer care, with gram-negative organisms dominating the antibiogram, and this demands swift action; 2) Surveillance must drive action, moving beyond the pharmacy and laboratory into bedside decision-making; 3) National and regional efforts need to be combined so that antibiograms and resistance data can be shared across the region; and 4) digitalization can strengthen stewardship programs by putting data in front of clinicians almost in real time.

5. From Policy to Practice: Access and Equity Perspectives in AMR and Cancer Care in Asia

Murallitharan Munisamy

Managing Director

National Cancer Society of Malaysia

Dr. Murallitharan offered a civil society perspective on access and equity, adding a further dimension to the global and clinical views of the preceding speakers and considering how civil society can complement and strengthen action on AMR. The Asian context makes this especially pertinent. Around one in three reported bacterial infections in the WHO South-East Asia region showed resistance, and the South-East Asia and Western Pacific regions together accounted for slightly more than half (51.5%) of all AMR-attributable deaths worldwide in 2021.

Cancer in itself is already complex, and AMR adds a dimension that directly affects how patients are managed. Yet this can also be seen as something of a relief. The cancer community often has to fight for resources, and its most successful partnerships have come from learning to work with counterparts and share resources. AMR is a problem common to the whole of health, and those working in cancer can sometimes wear blinkers, concentrating purely on getting therapeutics to their patients. Pooling resources on a shared problem can produce significantly better outcomes for everyone.

Equity is where the differences are starkest. A patient treated at a tertiary center benefits from good guidelines, a proper workup and targeted management of a resistant infection, whereas a patient in a rural or remote setting often does not, and this is true not only in low-income countries but in middle-income ones as well. Malaysia is close to high-income status, yet management of cancer-related AMR can be very poor as little as 50 kilometers from the capital. University and tertiary centers have good processes in place, but they are islands, with no concerted national direction in many Asian countries. Regional cooperation, whether through the WHO regions or ASEAN, remains distant, and countries are reluctant even to benchmark against one another. The result is wide discrepancies in AMR management between patients in the same geographic area.

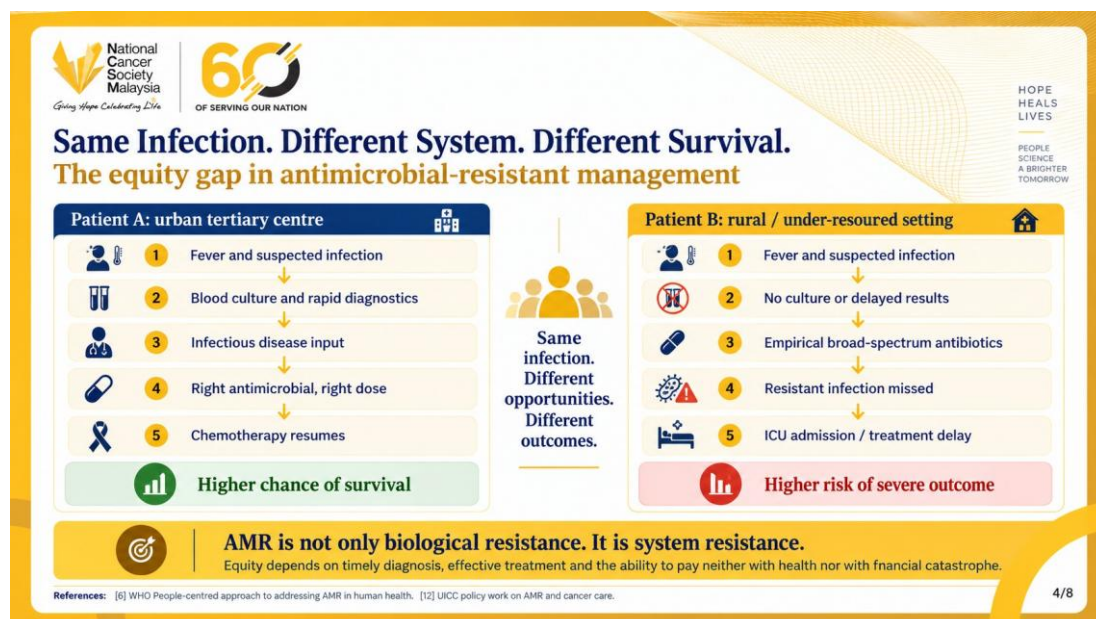


Figure 5. Same infection, different system, different survival: the equity gap in AMR management

Given the above, the question arises: can low- and lower-middle-income countries set and meet a high standard for equitable AMR care? Shaukat Khanum Memorial Cancer Hospital in Pakistan, a charity-driven institution, introduced a comprehensive antibiotic restriction program as early as 1995 and a formal antimicrobial stewardship program in 2010, and delivers a high standard of care through strongly equitable access strategies. When policymakers ask how much such measures will cost and whether they can be deployed beyond the largest tertiary centers, this example shows that it is possible.

Echoing the sentiments of Dr. Ilbawi, Dr. Murallitharan observed that any policy without resource allocation or budget is merely a vivid dream. Many cancer plans have no budget attached, let alone AMR plans, and remain attractive documents shown at international meetings but never implemented. One of civil society's main calls must therefore be for governments, and increasingly other players outside the public sector, to put money where their mouths are.

Dr. Murallitharan proposed five actions for civil society. In Asia, care is increasingly delivered not only through large public systems but also by standalone charitable organizations and smaller private providers, where advocating for change is often easier.

The first action is to put AMR into cancer control plans, at the national level but also within one's own hospital, district or region. It can take only one center to set the standard, which civil society can then hold up as a model for others, or, where necessary, use for naming and shaming.

The second action is to fund diagnostics as part of cancer care infrastructure. One positive legacy of COVID-19 is an abundance of laboratory equipment, including the PCR machines that have helped drive HPV DNA testing in the region, much of it now sitting idle in storerooms or in defunct private companies. Civil society can help repurpose this equipment for smaller settings, where governments may be unwieldy.

The third action is to protect access to effective antimicrobials in the face of budget constraints, central procurement problems and rising costs, including where generic suppliers drift toward monopolistic practices as the only players in the market. NCSM, a not-for-profit organization, directly imports nearly US\$10 million worth of medicines

into Malaysia, reducing the cost of certain medications by up to 60%, and hospitals can buy directly from the society. This requires local licensing, some creative processes and the support of the organization's leadership, but it is doable and already being done.

The fourth is to build oncology-specific AMR surveillance, with civil society playing a role in ensuring that last-mile patients treated in smaller settings, who often present with neutropenic sepsis and lack access to larger centers, receive the dignified care they need.

The fifth is governance, in which civil society can mediate, advocate and help drive change across the AMR and cancer policy space.



Figure 6. Five civil society actions for a more equitable future

Summing up, Dr. Murallitharan stated that AMR in cancer care is essentially low-hanging fruit: a shared resource space in which a win benefits healthcare as a whole. It is a relatively easy story to tell, and civil society can assist, lead in some areas, and help drive a strong message for changing the landscape.

6. Future Solutions: Generative AI & AMR Diagnostics

Building Resilient Cancer Care in Ukraine: Integrating Telemedicine and Antimicrobial Resistance Solutions

Teppei Sakano

Board Director

Asia Cancer Forum

Mr. Sakano, a representative of the private sector, noted that he is responsible for the Asia Cancer Forum's (ACF) digitalization activities, applying technologies such as telemedicine and AI to cancer care. Telemedicine in oncology takes several forms, from doctor-to-patient consultations by a primary care doctor to doctor-to-doctor support in which oncology specialists advise primary care or non-specialist physicians. ACF has built a nationwide doctor-to-doctor consultation platform in Japan, through which medical images, genetic data, prescription data and other information are

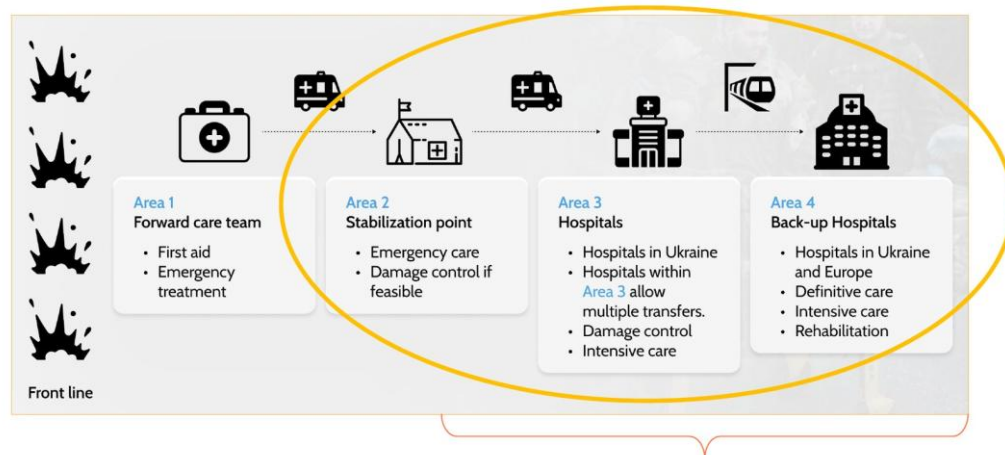
shared between designated regional cancer hospitals and the National Cancer Center Japan to manage difficult and rare cases. Some 88 hospitals, around a quarter of Japan's designated cancer hospitals, are already connected, and the same network is used for online surgical training and education.

ACF has also integrated portable medical devices such as ultrasound and X-ray units with electronic medical record and telemedicine systems, so that images are first screened by AI and difficult cases are referred to specialists by telemedicine. The same model supports a mammography bus in Chile and temporary screening sites in Kenya operated by non-specialists such as nurses. These elements have been combined into a single suitcase containing more than 20 portable devices integrated with the telemedicine system, bringing care to patients rather than requiring patients to travel to hospitals. The package is now deployed in a number of disaster areas, linked to disaster telemedicine centers operated by regional or national governments.

The same approach is being applied in Ukraine, where more than 1,600 medical facilities have been damaged or destroyed, mainly in the south and east. Cities such as Bakhmut have been left with no hospitals or infrastructure, and more than 200 doctors have been killed. Based on discussions with the Ministry of Health, ACF has provided two-month training programs in Japan for young Ukrainian doctors, with three groups of five, five and seven doctors trained to date. As the war has continued for more than four and a half years, needs have shifted from emergency care toward oncology, cardiovascular disease, pediatrics and other fields. Demand for infection-related training has also grown, and ACF has collaborated with Japan's national infection control center to provide education for Ukrainian doctors and technicians. ACF has also established a telemedicine center in Kyiv serving the heavily damaged south and east, and has signed a memorandum of understanding with the Ukrainian government to expand the service nationwide. Through these discussions, AMR has emerged as the most pressing need.

Statistics suggest that AMR increases mortality among wounded soldiers by 50%. Most casualties result from missile and drone strikes, and the resulting injuries are often complicated by infection, including fungal colonization by *Aspergillus*. Transfer from the front line to rear-area hospitals takes 7 to 10 days, and by the time patients arrive there is no information on where they were treated, what treatment they received, or which antibiotics were administered. A joint study by the Ukrainian Armed Forces and a U.S. Army research institute of 127 war casualties, with cultures taken a median of seven hours after injury, found almost no antimicrobial resistance genes, indicating that resistant infections are acquired during evacuation and treatment rather than at the point of injury. The head of the Health Department of Ukraine's Ministry of Defense stated at a U.S. military medicine conference in August 2026 that AMR is not simply a microbiology problem but a problem of the healthcare system itself.

Several civilian–military public–private partnership projects are now under way, including one, in which ACF is not directly involved, to decolonize casualties before hospital admission. ACF's own contribution is AMR data visualization and AI-powered clinical decision support across the evacuation chain. Using a mobile application, doctors and technicians enter patient information, diagnoses, pathogen data, prescriptions and test results. The AI then suggests which antibiotics to use and indicates which organisms are likely to be responsible, while also supporting testing processes and providing educational content for the clinicians and technicians involved. Data are shared nationwide, providing surveillance information for the health system as a whole.



Visualization of Antimicrobial Resistance Data and AI-Powered Clinical Decision Support

Asia Cancer Forum

Figure 7. AMR data visualization and AI-powered clinical decision support across the casualty evacuation chain

The system has been in use for more than six months at eight hospitals near stabilization points in the east and south of the country. A 50-day performance study found that over 96% of the antibiotics recommended by the AI were accepted by Ukrainian doctors, with rejections below 5%, and users reported that they were willing to continue using the application. Many challenges remain before the system can be provided nationwide, and Mr. Sakano invited specialists to collaborate. What began as a telemedicine project in oncology has expanded into AMR in response to demand and through the collaborative network, and he saw further potential beyond that.

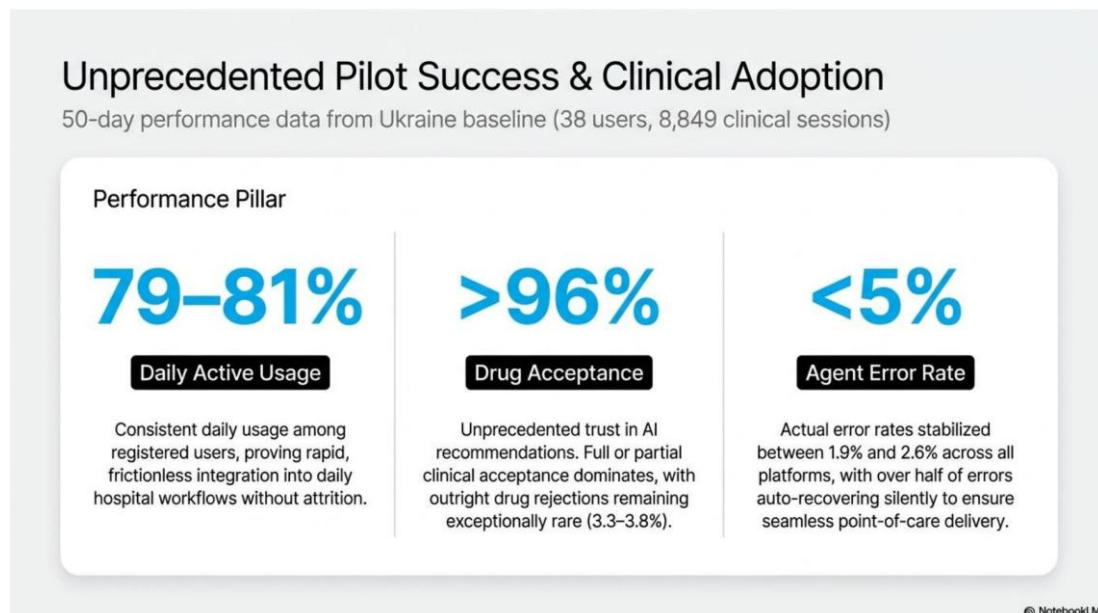


Figure 8. Pilot results from 50 days of deployment in Ukraine

7. Closing Remarks

Dr. Iwasaki observed that the four presentations had demonstrated the value and

importance of AMR control, especially for patients with cancer. In Asian countries, where resources are limited, education and training are vital—a point common to all four speakers, as is the importance of networks for countries with limited resources.

Mr. Sakano's telemedicine approach offered a valuable means of overcoming these constraints, and its use across borders could be even more valuable than domestic use alone. Proper diagnosis and appropriate use of antimicrobials are essential in tackling AMR, and AI-assisted and other digital tools are valuable for any country.

Dr. Iwasaki concluded by noting that this session represents only a starting point in addressing the problem of resistance. ACF intends to continue the discussion and to make every effort to support patients with cancer against AMR infections. He thanked the four presenters and expressed his appreciation to UICC-ARO for supporting the session.