Global One Health Diagnostics Access Compact (GO-Dx)

A multi-year compact to expand equitable access to priority human and veterinary diagnostics, and environmental surveillance—tied to antimicrobial stewardship (AMS) training, One Health surveillance, and innovation.

Purpose: To catalyze predictable, affordable, equitable and sustainable access to high-quality diagnostics that enable accurate treatment, antibiotic stewardship, infection prevention and control, surveillance and early warning across One Health; to strengthen health systems; and to mitigate antimicrobial resistance (AMR).

The Value of Diagnostics and Surveillance in a One Health World

Diagnostics, surveillance, and prevention are essential, interconnected pillars to effectively address infectious diseases and antimicrobial resistance risks posed within and across the human–animal–environment One Health interface. Accurate, timely data from tests inform appropriate patient treatment, thereby supporting more effective antimicrobial stewardship. When aggregated, these data underpin early warning, outbreak detection, trend analyses, and pathogen-specific control across sectors. Surveillance systems integrate these data to provide actionable insights, guiding outbreak detection and targeted interventions. Trend analyses highlighting anomalies provide early warning, enabling rapid responses that prevent localized events from escalating into broader health threats across sectors. Together, strong health systems with robust diagnostics and surveillance platforms move from reactive case management toward a proactive, intelligence-led health security paradigm that informs robust decision-making and enables timely preventive action.

Surveillance Intelligence: Data for Action

Every diagnostic result represents a meaningful surveillance data point, such as an organism detected, a resistance profile, a host biomarker, or its geographic and temporal context. Together, these results form the foundation of surveillance in all its guises: translating individual patient tests into population-level signals; tracking vector-borne and climate-sensitive diseases; monitoring livestock health; and strengthening pandemic early-warning systems across One Health.

When standardized and shared across sectors, these datasets enable early anomaly detection (such as unusual respiratory illness clusters[1]), source attribution (distinguishing spillover events from human-to-human transmission[2]), and risk mapping (including shifts in vector habitat[3]) informing rapid, targeted interventions. This interconnected data architecture is the core rationale for early-warning surveillance at the human–animal–environment nexus. In the age of

artificial intelligence, this data architecture can also lay the foundation for health security to predict and contain future outbreaks.

Beyond the clinic, syndromic surveillance and pathogen-specific testing across production animals and wildlife feeds shared surveillance dashboards that surface cross-species threats and guide timely biosecurity actions. Integrated U.S. systems show how linking human notifiable-disease reporting with veterinary monitoring—and enhancing both with molecular and geospatial tools—creates a more complete, real-time understanding of zoonotic risks. For example, integrated West Nile virus surveillance has shown that animal testing frequently detects viral circulation before human cases occur. In Emilia-Romagna (Italy), testing 22,314 corvids between 2013 and 2023 identified 642 positives (2.9%), with first detection in birds during 57 of 79 epidemic seasons (72.1%), often preceding or occurring without any human case notifications—enabling earlier, more targeted interventions[4, 5].

Environmental surveillance adds another essential dimension. Treatment and monitoring of wastewater provide significant One Health benefits, yet only about 60% of global wastewater is effectively treated, with coverage falling to approximately 25% in some countries[6]. Wastewater testing can reveal silent transmission long before individuals seek testing. In Warsaw, for instance, SARS-CoV-2 levels in wastewater began rising weeks before each of two documented COVID-19 waves, offering early insight into community infection trends and giving officials a crucial head start in understanding when circulation was increasing[7].

Antimicrobial Stewardship Through Diagnostic Utilization: Better Data, Better Outcomes

Adequate diagnostic utilization is fundamental to ensuring optimal patient treatment, including the appropriate use of antimicrobials. Organism identification and antimicrobial susceptibility testing (AST) support effective therapy to improve patient outcomes, reduce hospital length of stay, and lower overall antibiotic exposure—without increases in mortality. In addition, optimal use of diagnostics provides more accurate denominators and cleaner trend signals, thereby improving the quality of surveillance data.

Equally, inappropriate antibiotic prescribing remains pervasive: an estimated 30%–50% of prescriptions are unnecessary or sub-optimal, underscoring the value of timely diagnostic use to maximize antimicrobial therapies [8]. When embedded in diagnostic-enabled antimicrobial stewardship programs, these tools consistently reduce antimicrobial consumption by ~22%–36% without raising infection-related readmissions or mortality[9]. Unfortunately, significant gaps remain. Accreditation frameworks for antimicrobial stewardship offer a practical mechanism to strengthen appropriate antimicrobial use across hospital and community healthcare settings by providing a globally applicable structure that supports the healthcare workforce to use diagnostics and data in ways that align with local health-system needs.[10] By way of illustration, the Africa CDC reports that only 1% of laboratories in Africa are currently estimated to have bacteriology capacity, which significantly limits access to reliable diagnostics and appropriate antibiotics.[11] In addition to expanding access to existing test methods where appropriate, the

development of rapid, accurate, and affordable diagnostics is essential to ensure the right drug is given to the right patient at the right time at every level of the health system, globally.

At the clinical and operational level, hospital studies demonstrate that faster organism identification and antimicrobial susceptibility testing can generate approximately US $1,000 in savings per patient with bloodstream infections by enabling earlier appropriate therapy, with institution-wide savings ranging from US $200,000 to US $900,000, depending on program scale and setting[12, 13, 14, 15]. Rapid, accurate diagnostics can cut length of hospital stay by 1–2 days per patient with acute respiratory infections[16]. As an illustrative and conservative scenario, a one-day reduction in length of stay for patients hospitalized with acute respiratory infections in the United Kingdom alone translates into approximately 200,000 fewer bed-days and £80 million cost savings annually.

Emerging Zoonotic and Vector-Borne Threats: One Health Surveillance at the Interface

One Health surveillance demonstrates its value most clearly when human–animal sampling is paired with molecular typing to uncover spillover pathways and track cross-species transmission, with integrated platforms accelerating and sharpening detection. For example, genomic surveillance of West Nile virus has shown that viral strains detected in humans closely match those circulating in local bird and mosquito populations, enabling early identification of transmission hotspots and timely deployment of targeted vector control and public health interventions.[17, 18]

As temperatures, precipitation patterns, and extreme weather events shift, the need for dynamic surveillance platforms grows. Early-warning frameworks emphasize expanding environmental and animal samplings such as water testing, vector monitoring, and wildlife screening—and integrating these findings with human diagnostic data to detect geographic spread or seasonal changes before clinical cases surge. One Health perspectives underscore that such interface-focused diagnostics are essential for preparedness. Climate-d riven changes in mosquito and tick ranges further elevate the importance of rapid, field-deployable tools (e.g., multiplex PCR, antigen tests) for vectors, animals, and humans, while integrated analytics that link test results with environmental data sharpen forecasting and resource allocation. Where surveillance signals identify at-risk populations or emerging threats, they should systematically inform and trigger preventive interventions—including, where available, targeted vaccination—as the most impactful upstream response to contain spread before clinical cases surge.

Integrated One Health surveillance systems also demonstrate the value of combining herd and flock diagnostics with environmental sampling. For instance, coordinated wildlife and veterinary monitoring has repeatedly identified West Nile virus activity in animals before human cases appeared, illustrating how animal–environment surveillance can reveal hidden transmission earlier than human-only systems[19].

Building a Smarter, More Prepared One Health System

Taken together, these examples demonstrate that diagnostics, surveillance, and prevention are foundational to a resilient One Health system. By converting individual clinical, veterinary, and environmental findings into actionable intelligence, they enable earlier detection, clearer attribution, and more targeted responses to emerging threats. As climate pressures, zoonotic spillover risks, and antimicrobial resistance continue to grow, the value of timely, high-quality diagnostic data will only increase. Ultimately, strengthening these capabilities across sectors is essential for moving from reactive crisis management to proactive, intelligence-driven health security.

The Compact: Taking Collective Action

The undersigned organizations commit to supporting the following actions, recognizing that specific contributions may vary based on our individual missions, business models, and areas of work. Each organization will take forward the elements most aligned with its strategic focus while upholding the shared intent of advancing equitable access, stewardship, innovation, and appropriate valuation of diagnostics.

1. **Improved Access to Appropriate, High-Quality Diagnostics for All:** We strongly advocate for mechanisms that expand affordable and equitable access to new and existing diagnostics across all levels of income and care. Consistent with the AMR Global Action Plan, we will promote programs that reduce mortality, strengthen sanitation, hygiene, vaccination, infection control, education, and / or stewardship by ensuring that priority diagnostics are available throughout the patient pathway—from primary care to national reference laboratories. We will work with governments, developers and manufactures, global health institutions, access partners, and local (in-country) and / or regional stakeholders to improve the geographic and operational reach of essential, life-saving, diagnostic services. We will also engender equitable data and knowledge sharing, as well as promote ethical data use and application.

2. **Strengthened Stewardship and Appropriate Use of Diagnostics and Antibiotics:** We will collaborate with scientific and professional societies, regulatory agencies, and other key stakeholders to link access to last-line antibiotics with increased and appropriate diagnostic utilization. This includes supporting strengthened context-relevant antimicrobial stewardship, with education and training, and quality management systems training, as well as integrating diagnostic algorithms into routine care. Through these actions, we aim to improve antimicrobial stewardship programs thereby reducing mortality, promote responsible prescribing, and reinforce diagnostic-led decision-making across human and animal health systems. In this way we make sure that we will remain able to effectively treat infections in the future.

3. **Investment in R&D to Meet Public Health Needs with New Innovative Diagnostics:** We are committed to investing in and/or advocating for investment by private and public stakeholders in a range of innovative diagnostics, including those contextualized to low-

resource settings. We will continue to support research in academia, NGOs and industry. We further support open collaboration between industry and public research partners to overcome scientific challenges, recognizing the strong track record of public-private partnerships in accelerating innovation.

4. **Strengthened Diagnostic Utilization through Improved Valuation:** We will work with governments, payers, health system stewards, and global partners to ensure that diagnostics are appropriately valued, reimbursed, and integrated into clinical and public health pathways. To achieve this, we will promote valuation and payment frameworks that reflect the public health benefits of diagnostics, remove affordability barriers, and support funding for priority tests. We will also advocate for their integration into national benefit packages and essential diagnostic lists, encourage health-economic research that captures downstream benefits such as reduced antibiotic consumption and cost savings, and support regulatory and reimbursement harmonization that facilitates timely and sustainable access.

Full GO-Dx Compact Signatory List

African Society for Laboratory Medicine, American Society for Microbiology, AMR Action Fund, Bavarian Nordic, bioMérieux, British Society for Antimicrobial Chemotherapy, CARB-X, Ceva Animal Health, Copan Group , Danaher Corporation, DxAMR Collaborative, European Society of Clinical Microbiology and Infectious Diseases, Infectious Diseases Society of America, InnotiveDx, International Society of Antimicrobial Chemotherapy, LifeArc, Liofilchem, Nostics, Novo Nordisk Foundation, Roche Diagnostics, Sysmex, Waters Corporation

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