ANTIBIOTIC RESISTANCE COALITION AND CIVIL SOCIETY INPUT TO THE INTERAGENCY COORDINATION GROUP ON ANTIMICROBIAL RESISTANCE

May 2018

Signatories:

African Christian Health Association Platform
Alliance to Save Our Antibiotics
American Medical Student Association
Center for Indonesian Veterinary Analytical Studies
Center for Science and Environment
Consumers' Association of Penang
Ecumenical Pharmaceutical Network
Food Animal Concerns Trust
Health Action International
Health Care Without Harm
Health Justice Philippines
IFARMA
Initiative for Health & Equity in Society
Institute for Agriculture Trade and Policy
National Resources Defense Council
Oceana Chile
Pan-African Treatment Access Movement
People's Health Movement
Public Citizen
ReAct – Action on Antibiotic Resistance
ReAct Africa
ReAct Asia Pacific
ReAct Europe
ReAct Latin America
ReAct North America
Sahabat Alam Malaysia (Friends of the Earth Malaysia)
Society for International Development
Sustainable Food Trust
Third World Network
Universities Allied for Essential Medicines
US Public Interest Research Group
What Next Forum
Yayasan Lembaga Konsumen Indonesia (Indonesian Consumer Organization)

Introduction:

As the work of the UN Interagency Coordination Group on Antimicrobial Resistance proceeds, we would like to share some inputs into these important deliberations. Members of the Antibiotic Resistance Coalition and its civil society partners convened for a meeting co-organized by ReAct, the South Centre and Third World Network, *Charting a Future Free From the Fear of Untreatable Infections: A Civil Society Agenda*, from May 7 to 9 in Geneva, Switzerland. Drawing from these discussions and building on the unifying principles laid out in ARC's Antibiotic Resistance Declaration and its previous policy statements, we have put forward some considerations for the IACG's recommendations. These points also underscore the charge laid down by the UN Political Declaration on AMR that led to the creation of the IACG.

Given that the IACG's work currently is organized into six Subgroups, we have prepared our inputs into the six thematic areas, although we anticipate that these inputs may well feed into the work of multiple Subgroups and the consideration of the IACG overall. As the IACG's work in these areas becomes available for public consultation, members of the Antibiotic Resistance Coalition look forward to providing additional feedback. In the process of generating these inputs for the IACG, over fifteen civil society groups provided feedback to the Antibiotic Resistance Coalition's Secretariat for consideration.

Subgroup 1: Communication, public awareness, behavior-change, professional education and training

- Effective communication involves more than just broadcasting information: it should mobilize key constituencies. In such public awareness campaigns, civil society should be recognized and included for its critical role as a vehicle for communicating for public awareness and behavior change over AMR, and this should be an integral part of the implementation of National Action Plans.
- Communication for behavior change should involve empowering local champions, both among providers and patients as well as communities and civil society. Any NAP implementation or global strategy on AMR should acknowledge the importance of rooting such efforts more sustainably in networks of local champions and advocates. The work on AMR will not be a short sprint, but a marathon.
- Professional associations and industry groups should be encouraged to come out with position statements, if not codes of conduct, for its members regarding antibiotic use, marketing and AMR. These position statements and codes of conduct can be tools to induce behavior change—even if they are not legally enforceable--in these groups.
- Specific training modules could be developed for engaging professional groups, and efforts should be made to increase awareness through short training sessions. There should be a clear action plan in place, regarding development of these modules and administering them.
- AMR and Infection Prevention and Control (IPC) integrated modules should be incorporated in curricula of prescribers and other healthcare groups, those should include a focus on communication skills to empower health professionals to challenge misuse or overuse of antibiotics in practice
- Regulatory bodies should be engaged in ensuring AMR modules are included in recertification and continuing professional education for all health professional groups.
- The public narrative for addressing antimicrobial resistance should move away from the war metaphor to one that recognizes more holistically the ecological interplay between humans and bacteria in the environment. This has significance in how we approach this challenge, from the overuse of antibacterial agents in our built environment to the need for greater understanding of how a healthy microbiome might resist infection by bacterial pathogens.
- Especially given limited resources, targeting communication efforts is key. In the short and medium term, focusing on raising awareness in specific interest groups can be a potentially high impact activity. It can help in channeling resources to achieve specific objectives in raising awareness among these groups, which can lead to behavior change. Context specific and culturally appropriate communication mechanisms

should be adopted to convey and create a sense of urgency and mobilize societal action for AMR

- Low- and middle-income countries suffer from weak health systems and other practices that can potentially drive up the rate of AMR, such as poor conditions of sanitation and environmental hygiene. Some of these countries are still grappling with other endemic disease challenges as well as the HIV and AIDS pandemic. There is need for special focus on these countries to ensure that the threat of AMR is adequately communicated to all relevant sectors, and that national and regional responses against AMR are initiated and maintained.
- Targeting the focus of AMR behavior change efforts is also strategic. The example of Thailand's Antibiotic Smart Use project is instructive. By focusing on three conditions—cold, cough and diarrhea—the messaging is clear, and impact, more easily measurable. By providing an herbal treatment alternative for palliating viral causes of fever, the project also took into account the sociology of the doctor-patient encounter.
- The Tripartite Agency Monitoring & Evaluation framework for AMR must include indicators that are transparent, actionable, and focused on measurable changes in behavior, not just attitudes or knowledge.
- Monitoring for accountability can give important impetus for motivating behavior change. Such monitoring requires effective surveillance and data collection as well as a commitment to making such information transparent and actionable by the public, civil society and policymakers.
- Effective monitoring systems will produce data that—when placed into the hands of civil society or the public—will yield policy triggers. For example, antibiotic residues or drug-resistant pathogens on retail grocery shelves can serve to alert the public and regulatory authorities alike.
- There is a risk of groups with commercial interests (like pharmaceutical companies or organizations funded by them) taking over the campaign and orienting it in ways which can benefit them or their interests. There should be an institutional mechanism to evaluate potential partners regarding their commercial interests and funding channels. This would be an institutional safeguard against conflict of interest in addressing AMR.
- The IACG should encourage collaboration between governments and civil society organizations towards public education efforts. While governments can reach local institutions, government officers, and political and regulatory bodies, CSOs have the capacity to connect with opinion leaders, local actors and communities where governments may have limited reach.
- The work of the IACG itself must reflect the principles of transparency, accountability, broad consultation including with civil society, and conflict of interest disclosure in all of its deliberations, so that the communication

of its findings and recommendations will be credibly received.

Subgroup 2: National Action Plans, including measurement and surveillance

- National Action Plans (NAPs) should make clear and concrete commitments to the principles in the UN Political Declaration on AMR, including but not limited to the charges to
    - "Develop multisectoral national action plans, programmes and policy initiatives in line with a One Health approach and the global action plan on antimicrobial resistance…" and
    - "Take steps to ensure that national action plans include the development and strengthening, as appropriate, of effective surveillance, monitoring and regulatory frameworks on the preservation, use and sale of antimicrobial medicines for humans and animals that are enforced according to national contexts and consistent with international commitments."
- The IACG should provide a clear roadmap to "mobilize adequate, predictable and sustained funding and human and financial resources and investment through national, bilateral and multilateral channels to support the development and implementation of national action plans, research and development on existing and new antimicrobial medicines, diagnostics, vaccines and other technologies and to strengthen related infrastructure, including through engagement with multilateral development banks and traditional and voluntary innovative financing and investment mechanisms, based on priorities and local needs set by governments, and ensuring public return on investment." These resources should not only be limited to human health sectors, but also span animal, agricultural, and environmental sectors. Similarly, the IACG's roadmap should recommend resource mobilization not only for the development of new technologies, but also for innovation of practice, which includes stewardship in the healthcare delivery system and sustainable farming to mitigate the overuse or misuse of antimicrobials across sectors. Animal, agriculture and environment sectors should receive adequate attention.
- NAPs on AMR must recognize the challenge of underuse, not just overuse, of antibiotics and anticipate as well as support the transition of livelihoods, particularly of those marginalized or engaged in small-scale agricultural operations, in implementing these policy initiatives.
- The implementation of NAPs must recognize how the local context varies, and those providing technical support should work to develop approaches that are culturally sensitive and context specific. This will require investing in the innovation of local approaches to access and stewardship of antibiotics in both healthcare delivery and in food

production as well as in the sharing and adoption of best practices.

- The NAP process should not only take a One Health approach and involve key stakeholders from the healthcare delivery, food production and environment sectors, but also must engage civil society for effective implementation, assessment and reporting of NAP progress. The implementation of NAPs will require rooting these efforts in the mobilization of key constituencies best reached by enlisting civil society.
- Harnessing the potential of civil society and other actors may be helpful in building political will and momentum and would increase transparency of national progress on AMR.
- Given limited resources, support should be provided to country governments, so that they may assess what measures or interventions to prioritize in addressing AMR. These priority-setting approaches should be transparent to the public along with the data driving these decisions. Governments should be supported to cost action plans and build the economic case--factoring in both direct and indirect benefits--for informed decision making among competing priorities to address AMR.
- In order to derive maximum effectiveness of AMR containment efforts in the short-term, IACG should consider focusing on select high-priority countries. The criteria for selection could include the extent of antimicrobial use and production; consumption, export and import of meat and other food animal products; and infectious disease burden.
- The NAP process should ensure that policymaking is not distorted by financial conflict of interest. Implementation of the NAP will require receiving input from a broad range of stakeholders, including those with commercial interests; however, this can and should be done without compromising the public's interest and without having public policy decision making influenced unduly by those commercial interests. This is a clear signal that the IACG should communicate in its recommendations as well as its own deliberations.
- Many of the members of the Antibiotic Resistance Coalition work on AMR as part of a larger set of development concerns cutting across sectors. From this experience, it is clear that NAPs too must integrate the work of AMR into larger development concerns, as recognized in the Sustainable Development Goals and Universal Health Care Agenda 2030 as well as AMR-sensitive efforts like WASH, and not just rely on vertical programs focused on AMR.
- Irrational antibiotic use is driven by health system issues with many countries having a largely unregulated and heterogenous private health sector with over-the-counter sale of antibiotics (including irrational FDCs, which should be clearly differentiated from rational FDCs included in the WHO's EML). NAP implementation would be very difficult unless the health system issues

are concurrently addressed through Universal Health Coverage and SDGs.

- The IACG should specifically provide a clear approach to harnessing technical support from WHO, FAO, OIE and other intergovernmental stakeholders such as UNEP, UNICEF, and UNDP for supporting NAP implementation. The IACG should recommend an approach that ensure coordination, consensus and coherence in guidance and communication at the global, regional and country level. Similar to how the WHO, FAO, and OIE are operating at the global level, there should be similar coordination at the regional and country levels between their respective offices in close collaboration with other key partners, including other UN agency offices and civil society within the region and in country.
- In the wake of the limited focus so far on environmental aspects of AMR, the IACG should push for collective efforts for global guidance, standards and capacity to manage waste from farms, industry and healthcare settings. It should expedite effective integration of UNEP across all potential sectors and involve other environmental groups to fill the gap and leverage local expertise. AMR should no longer remain a mandate specific to the tripartite and move beyond to include environmental agencies. In addition, the tripartite monitoring and evaluation framework needs to evolve to include suitable environmental indicators.
- Monitoring and evaluation of progress on implementing national actions plans should build on the WHO's M&E framework, but reviews of progress should also take stock of the gaps, bottlenecks and barriers to implementation in countries and elevate such findings to the appropriate political level for consideration on how to address these.

Subgroup 3: Reduce need for antimicrobials and unintentional exposure, and optimizing use

- The indisputable need for innovation to bring new antimicrobial medicines to market has overshadowed the importance of other forms of innovation. These include the repurposing of older antibiotics and development of effective combination products; R&D of new diagnostic and vaccine technologies that would reduce the need for antimicrobials; and the piloting and scaling of improved antimicrobial use practices, both in stewardship in healthcare delivery and in animal husbandry and aquaculture practices in food production systems. Global financing and coordination of innovation to address AMR must extend to these other priorities.
- Access and stewardship should be recognized as twin goals, and there must be efforts to address the challenge of lack of access to antimicrobials, particularly for people living in areas with weak health systems, not just overuse of these life-saving drugs. Efforts should also more fully appreciate

the role that diagnostic support can play in allowing the appropriate use of antimicrobials.

- Substandard and falsified antibiotics contribute to the challenge of rational use of antibiotics in healthcare delivery and subsequently to antimicrobial resistance. They are a major issue that needs to be urgently tackled in many developing countries. The regulatory agencies of each country should be given the mandate and adequate budget to conduct inspections. Ensuring access to safe, effective antibiotics and diagnostics requires well-resourced quality assurance mechanisms. The use of traceability mechanisms from production to dispensing, secure packaging, pharmacovigilance, including postmarketing surveillance systems, and technological measures to prevent falsified medicines can possibly reduce the burden of the issue.
- Also problematic is the illegal marketing of unregistered, fixed-dose combination antibiotics by multinational companies, such as those identified in a recent study of the Indian marketplace.
- Better training of health professionals could help curb excess use through non-commercial, evidence-based programs, including those that emphasize the importance of infection prevention and control practices in healthcare facilities. Private healthcare providers and low-skilled and/or informal providers should also be included in these efforts.
- Payment incentives for healthcare professionals should be aligned, so as not to exacerbate inappropriate use of antimicrobials, but rather to support appropriate access and to incentivize effective stewardship. Educational programs or marketing on antibiotic use sponsored by drug companies pose a financial conflict of interest that should be avoided.
- Manufacturers and those selling antibiotics to providers, farmers, consumers and others in both the healthcare delivery and food production systems should be prohibited from marketing for inappropriate uses or incentivizing medical and veterinary personnel to overuse or inappropriately prescribe antibiotics.
- Professional associations and organizations and collectives of hospitals and healthcare providers should play an important part in all initiatives for reducing antibiotic use, in the human, animal and environmental sector.
- A major part of the strategy in reducing the reliance on antimicrobials in the food system requires reforming food production systems using innovative strategies and agro-ecological approaches that do not harm the health of people or the planet. Lowering stocking densities, providing access to the outdoors, using more resilient breeds are all farming practices which are known to reduce the need for antibiotics and should be encouraged.
- As stated by the European Food Safety Authority and the European Medicine Agency, “In some farming systems, much reliance is placed on the routine use of antimicrobials for disease prevention or for the treatment of

avoidable outbreaks of disease, such that these systems would be unsustainable in the absence of antimicrobials. The stress associated with intensive, indoor, large scale production may lead to an increased risk of livestock contracting disease." According to EFSA and the EMA, "Farming systems with heavy antimicrobial use should be critically reviewed, to determine whether/how such systems could sustainably reduce the use of on-farm antimicrobials. If a sustainable reduction in the use of on-farm antimicrobials is not achievable, these systems ideally be phased out." The IACG should support policies aimed at phasing out any farming practices or systems which are unsustainable in absence of high levels of antibiotic use.

- Antibiotics should be available to treat diseased animals. But antibiotics considered critically important for humans must not be used for animals, except under veterinarian oversight for very narrowly defined circumstances treating diseased animals to save lives or prevent serious suffering when no alternatives exist.
- Food produced without routine use of antibiotics and without antibiotic residues should be labelled through reliable, certified schemes to facilitate consumer choice. Food produced with routine use of antibiotics must be clearly labelled, until effective prohibition of such antibiotic use can be introduced.
- By choosing to purchase food produced without the routine use of antibiotics, both consumers and procurers of food can play an important role in shaping how suppliers use antibiotics in bringing their product to market.
- The IACG's recommendations should include the recent WHO guideline on the use of medically important antimicrobials in food-producing animals in its report for the consideration of, and support by, Member States at the UN General Assembly and relevant international bodies. These guidelines represent an important step in curbing the use of antimicrobials for growth promotion and preventative use in the food system.
- Feed containing antibiotics and its labelling, marketing and imports remain largely unsupervised. There is a need for oversight mechanisms of the claims being made, of the online marketing and of the importing of feed and premixes. There is also a need for policy frameworks to be created for data disclosure on antibiotics used and sales of feed.
- Several alternative products (such as probiotics, prebiotics) are already being used in food animal production. Their potential role in reducing the need for antibiotics needs to be included in the global discussion on antibiotic resistance reduction.
- The potential environmental impact of antibiotics does not stop with discharge from manufacturing plants, but also extends to the run-off from agricultural operations and to point source pollution such as hospitals where these antibiotics are used. Studies have shown that the prevalence of antibiotic resistance in bacteria of public health importance can

be increased by this antibiotic pollution. Therefore, antibiotic resistance should be included in environmental risk assessments of human and veterinary antibiotics. Measures to reduce agricultural antibiotic pollution, such as proper composting of manure or treatment of slurry, should be introduced.

- There is now clear scientific evidence (Sandegren, 2014) that the "minimum selective concentration", above which an antibiotic selects for resistant bacteria, can be many times lower (in some cases hundreds of times lower) than the minimum inhibitory concentration (MIC). This has important implications for the setting of Maximum Residue Limits (MRLs) for residues of antibiotics in foods. The current method for setting MRLs assumes that no selection for resistance can occur below the MIC. There is, therefore, a need to revise the method for setting MRLs, which may need to be significantly reduced in many cases in order to avoid residues selecting for resistance in the human gut.
- Ensuring effective stewardship of antimicrobial use in both the healthcare delivery and food production systems requires a monitoring system with data collection and transparency.
- The pharmaceutical industry can play its role in supporting effective stewardship by disclosure of data on antibiotic production and sales and on the disclosure of antibiotic API discharged as effluents from manufacturing plants.
- To reduce antibiotic pollution, the pharmaceutical industry could take greater responsibility in the safe disposal of unused or expired antibiotics across the supply chain, such as through antibiotic take-back programs from consumers, retailers, and bulk drug dealers.

Subgroup 4: Invest in innovation and research, and boost R&D and access

- The IACG should be guided by the principles laid out in the UN Political Declaration on AMR: "all research and development efforts should be needs-driven, evidence-based and guided by the **principles of affordability, effectiveness and efficiency and equity, and should be considered as a shared responsibility…**" [emphasis added].
- Similarly, the UN Political Declaration notes, as should the IACG in its findings: "we acknowledge the importance of delinking the cost of investment in research and development on antimicrobial resistance from the price and volume of sales so as to facilitate equitable and affordable access…"
- For delinkage to ensure access and stewardship, healthcare delivery system actors that engage in stewardship of and provide access to antimicrobials, not just drug companies, must be involved in constructing the arrangements.
- R&D incentives should foster R&D collaboration and accelerate delivery

time of a new product from "bench to bedside," through the sharing of research results, clinical trial data, and compound libraries, as well as the pooling of intellectual property rights. Such approaches have the potential to speed up development, reduce costs, and increase efficiency.

- Funding incentives, whether push or pull funding, should be aligned to ensure that public resources are invested in a coordinated fashion so that when developers receive sufficient incentives to develop new medical tools, they are not paid twice, once upfront with push incentives and again upon market entry, through pull incentives or high prices of the final product.
- In designing incentives for antibiotic, vaccine or diagnostic innovation, key operating principles should include:
    - Delinkage of a drug company's return on investment from the price and volume of antibiotic sales;
    - Transparency of R&D costs (delineated by product and clinical trial phase), clinical trial data and prices;
    - Fair and sustainable return on public investment, as benchmarked against prices obtained under generic competition or through alternative approaches such as a product development partnership; transparency on cost of goods and R&D funding; or prices achieved in a setting where the intellectual property is publicly owned and licensed;
    - Commitments to achieve affordable access and effective stewardship of these drugs; and
    - An end-to-end approach whereby, upstream incentives in the R&D pipeline should be coupled to shaping access and stewardship downstream.
- Certain incentives run contrary to the principle of delinkage and risk exacerbating the misalignment of economic rewards and antimicrobial stewardship. Such incentives include efforts to extend patent, data or market exclusivity.
- The proposal of awarding vouchers for transferable IP exclusivity for antibiotic innovation imposes an additional financial burden on important medicines needed for others, like cancer patients.
- Late stage market entry rewards will not address adequately the serious scientific bottleneck in the discovery of novel classes of antibiotics nor improved access to old, existing drugs
- To ensure this scientific bottleneck is addressed, incentives should move beyond bets on individual companies, drug by drug, to investments that transform the innovation ecosystem, from pre-competitive inputs to clinical trial platforms.
- If life-saving antibiotics are not affordable, then they will not be available to those in need. It is important for the IACG to describe policy options for ensuring the affordability of both novel and existing antibiotics,

particularly of those in short supply. The WHO-Health Action International Medicine Prices project, the WHO Vaccine Product, and the Price and Procurement (V3P) project provide useful lessons in how a standardized instrument might support greater transparency of pharmaceutical product pricing, offer a measure of affordability, and take stock of availability.

- Investments in R&D and innovation should not focus exclusively on bringing new antimicrobial drugs to market, but also on other areas of innovation that are needed to most effectively combat antimicrobial resistance, including repurposing of older antibiotics, adapting existing drugs to specific local needs, exploring the role of combination products, R&D of new diagnostic and vaccine technologies, and piloting and scaling of improved antimicrobial use practices.

Subgroup 5: SDG alignment, Global Governance post 2019, and UN role and responsibilities

- The proposed system of global governance over AMR efforts should build upon, as the UN Political Declaration on AMR does, the Tripartite blueprint for tackling AMR of the Global Action Plan on antimicrobial resistance, the Universal Healthcare Agenda, and the 2030 Agenda for Sustainable Development.
- Certain principles importantly would undergird an effective system of global governance on AMR:
    - Intersectoral collaboration, including the healthcare delivery system, food production and the environment
    - Integration of AMR into existing programs, frameworks and initiatives, while looking for specific AMR results
    - Alignment of the work of Tripartite agencies, other UN agencies and other multilateral organizations to address priority areas for AMR
    - Broad participation among countries, particularly low- and middle-income countries
    - Solicitation of inputs from various stakeholders across sectors including civil society organizations
    - Avoidance of any conflicts of interest especially among those who might shepherd a global governance process.
- Integrating AMR into the relevant international indicator frameworks, including the Global Burden of Disease Study, and into the voluntary national reviews of the implementation of Sustainable Development Goals would usefully contribute to global efforts to tackle this challenge.
- Monitoring and evaluation of progress towards an effective response to AMR is essential to ensure accountability. Such monitoring requires governments to ensure collection and public transparency of relevant data as well as the complementary efforts of civil society to hold key stakeholders

accountable. Indicators can play a useful role in holding stakeholders accountable and trigger much needed regulatory changes.

- The Tripartite Agency Monitoring & Evaluation framework for AMR must include indicators that are transparent, actionable, and focused on changes in behavior, not just attitude or knowledge.
- Global governance must include leadership in environmental AMR monitoring and surveillance, with effective integration of UNEP alongside the work of WHO, FAO and OIE.
- Tangible measures to mobilize financial and technical assistance for global and national implementation of efforts to tackle AMR; set specific indicators, milestones and targets for achievement; and put forth mechanisms for sustainable political commitment and lasting global coordination are needed.
- Efforts should be made to secure commitments towards addressing AMR from country governments in such a way that would enable low- and middle-income countries that bear a disproportionate burden in tackling AMR can do so equitably.

Subgroup 6: Surveillance and monitoring for antimicrobial usage and resistance

- Surveillance and monitoring are key to ensuring accountability in making progress towards an effective response to AMR.
- Effective surveillance systems (using quality-assured tools) must provide monitoring integrated across sectors, including the healthcare delivery system, food production and the environment.
- Concrete plans for mobilizing both financial and technical resources, including laboratory resources, for implementing local surveillance systems, particularly in low- and middle-income countries, are critical.
- While standardization is important, the design of surveillance and measurement approaches should be tiered to the stage of development or level of resources in that country setting. This tiered approach might enable broader participation among less well-resourced countries and provide steppingstones to deeper engagement as local infrastructure and capacity grow.
- Surveillance and monitoring must not only measure efforts to use antibiotics more appropriately and to avoid overuse, but also must safeguard against underuse. To ensure access, it is necessary to monitor antibiotic price, stock outs, access to second-line antibiotics, and quality of medicines sold on the market. It is crucial to involve the public and healthcare providers and put a mechanism in place to allow them to report on prices and stockouts, including those of essential diagnostic tests.
- For surveillance in human health, it is critical to ensure that national data are reflective of the resistance patterns in the community hospitals, clinics and rural areas. Access to diagnostic tools and quality-approved microbiology laboratories, hardly available in low-resource settings currently, is a crucial

element of this. Relying on data derived solely from tertiary care hospitals can overestimate resistance rates and misguide national guideline development and monitoring processes.

- Monitoring efforts should also pay attention to conflict of interest issues, both in the healthcare delivery and the food production systems. In healthcare delivery, conflict of interest can arise from misaligned financial incentives for providers to prescribe or dispense antibiotics or mispromotion of antibiotics. In the food production system, these concerns can arise when veterinarians face incentives to overprescribe antibiotics or to use antibiotics for non-therapeutic indications.
- Surveillance of antibiotic use in agricultural crops and AMR in agricultural environment and commodities should be integrated into the overall surveillance efforts. Countries need to be supported to better understand and address emergence and spread of AMR from agricultural systems, judicious antibiotic use practices and risk reduction approaches along with enforcement of standards for antibiotic residues in agricultural food products.
- Where possible, countries should collect and publish data on antibiotic use in livestock by species, and by farming system used (intensive, free-range, organic). The transparency of such data can help motivate reductions in antibiotic misuse and overuse.
- In the spirit of a true One-health approach, understanding and addressing the environmental dimension of AMR must receive greater focus at the global level and ensure that environment is adequately reflected and effectively integrated into the guidance across sectors linked directly or indirectly to AMR and lead to a greater buy-in of the environmental policy makers at a national level.
- The NAP surveillance efforts for example should encompass use and sales of antibiotics for crops and Active Pharmaceutical Ingredient levels in waste from farms, industry and health care facilities.
- Surveillance systems should take into account the evidence that the "minimum selective concentration", that is, the level at which an antibiotic selects for resistant bacteria, is many times lower than the minimum inhibitory concentration (MIC). This finding should prompt efforts to reduce the Maximum Residue Limits of antibiotics in food that assume that no selection for resistance occurs below the MIC.
- Discharge limits of antibiotics in effluents such as from pharmaceutical manufacturing, hospitals and food processing units must be determined. Waste management strategies should be formulated to reduce microbiological contamination from food animal farms and healthcare settings. AMR-centric approach should be adopted and embedded into the environmental regulations across food, feed, drug and healthcare sectors. For example,

presence of antibiotics in industrial waste or effluents such as from pharmaceutical industry should be considered as a hazardous chemical, and policy changes made accordingly.

- As part of a long-term AMR containment strategy, AMR surveillance in the environment including that of antibiotic residues, resistant bacteria and other determinants must be integrated with surveillance in human, animal and food sectors. Apart from the framework for integrated surveillance, standards and guidelines that help harmonization of testing methods, analysis and reporting across different sectors, sub-sectors and geographies should be formulated and disseminated into the country-level surveillance systems along with technical support to build capacity.

From across the spectrum of civil society engaged in antimicrobial resistance, we hope that these collective reflections will make a constructive contribution to the IACG's process in arriving at recommendations for the UN Secretary-General on this intersectoral challenge. For each Subgroup, we have sought to lay out a framework of important principles that might serve as a useful guidepost to your deliberations. We would be pleased to connect the IACG's Subgroups to parts of the Antibiotic Resistance Coalition and its civil society partners that might share further perspective on these issues.