

We need a “moonshot project” to control antimicrobial resistance

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The threat of antimicrobial resistance (AMR) requires urgent political action. Ongoing international efforts are likely to be insufficient to address the transboundary, cross-sectoral, collective action problem of AMR. A process towards a new antimicrobial treaty may be framed as a strategic “node” in a mission-oriented project to prevent the dramatic, global repercussions of AMR. Past treaty-making efforts offer valuable insights into how a diplomatic campaign for a new treaty may lead to a global transformation in how antimicrobials are used, developed and distributed. A bold civil society advocacy initiative capable of mobilizing and monitoring political support for an AMR treaty across sectors and borders will be the key to success.

The problem of antimicrobial resistance

Antimicrobial resistance (AMR) is an increasingly urgent threat to people, societies and the global economy. In January 2021, a major study published in *The Lancet* suggested that drug-resistant bacterial infections kill an estimated 1.27 million people globally each year (1). If no action is taken, the number of annual fatalities could increase tenfold, to as many as 10 million by 2050 (2). In this scenario, cancer care will be set back by decades (3). One in five cancer patients need antibiotics during their cancer treatment to stave off life-threatening infections. Thus, without effective antibiotics most cancer treatments will be extremely risky to perform. Cancers that affect the immune system, such as leukaemia and lymphoma, cannot be treated without antibiotics. In addition to the lives lost, AMR is expected to create global social and economic problems of dramatic proportions as it impacts on labour supply (human health) and livestock production (animal health). In a business-as-usual scenario, AMR may result in a more than US\$ 3.4 trillion decline in the world’s annual gross domestic product (GDP) over 10 years and force an estimated 24 million people into extreme poverty (4).

From the perspective of international governance, AMR appears as a transboundary, collective action problem (5). Drug-resistant microbes, like other microbes, spread across national borders. Individually, a country may be tempted to disregard AMR, hoping that other countries will shoulder the burden of tackling the problem. But if most, or all, countries act as if the problem does not exist, all countries will end up as

long-term losers. AMR is also a cross-sectoral problem. While the most conspicuous repercussions of AMR may be described in terms of global health, AMR will likely also have serious adverse social, economic and development consequences. Moreover, important drivers of AMR are found in agriculture and other non-health sectors (6). In particular, antibiotics are used as prophylactic treatments and growth promoters in livestock production (7). Tackling AMR therefore requires a One Health approach (8).

Over the years, many policy initiatives have been developed to address AMR. In 2015, the World Health Assembly (WHA) adopted a global action plan that commits all countries to reduce the incidence of infection and optimize the use of antimicrobial medicines (9). In 2016, the United Nations General Assembly (UNGA) adopted a political declaration on AMR, in which UN member states committed to developing national action plans and taking steps to develop or strengthen effective surveillance, monitoring and regulatory frameworks on the preservation, use and sale of antimicrobial medicines (10).

So far, however, there is little evidence to suggest that these efforts have even begun to stem the global tide of drug-resistant bacterial infections (11). A recent review of the WHA global action plan revealed serious deficiencies, including the lack of a shared understanding amongst governments of the potential outcomes of implementation efforts, inadequate monitoring of implementation, insufficient prioritization of control measures, and weak resource mobilization (12). John Hopkins Bloomberg School of Public Health and ReAct (an independent network

dedicated to the problem of AMR) highlighted further concerns about the lack of accountability in the implementation of the commitments, limited cross-sectoral engagement and involvement of civil society, insufficient focus on the lack of access to effective antimicrobials in developing countries, and undue industry influence in AMR governance (13).

These deficiencies prompt the question of whether existing international tools are fit for purpose? Neither the global action plan nor the political declaration are legally binding documents; they rely on voluntary contributions and the efforts of national governments. Moreover, while the World Health Organization (WHO) has attempted to involve other UN agencies in implementation efforts (14), discussions about AMR have largely been confined to WHO's sphere of activities. Although initiatives have been made to push the issue higher up on the agenda of national governments (15), this does not appear to have led to a broader public discussion about the important consequences of AMR and the need for urgent action.

A “moonshot project” to solve AMR

Preventing the global repercussions of drug-resistant infections requires a mission-oriented “moonshot” project; that is, the mobilization of a wide range of actors across sectors around “a clear, ambitious and urgent goal with a deadline” (16). A new treaty on AMR may be a strategic node in such a project. History suggests that when treaties are well crafted, they can be effective tools for solving transboundary, cross-sectoral, collective action problems (17). A prominent example is the Montreal Protocol, which has prevented hundreds of millions of cancer cases and largely healed the stratospheric ozone layer. Similarly, the Mine Ban Treaty and the Convention on Cluster Munition have, through a remarkable process of global normative entrepreneurship, protected countless civilians from the indiscriminate effects of these weapons (18).

Through focused processes of negotiation and implementation, the treaties mobilized a wide range of actors across sectors, countries, and institutional boundaries around clear, ambitious and urgent goals (19). The processes required purpose-driven leadership, significant risk-taking and experimentation in how the required societal, environmental and technological change might be achieved, as well as organizational agility and flexibility, notably within and across the government agencies, international organizations and nongovernmental organizations NGOs involved in the process. By drawing on the lessons learned from successful treaty-making efforts, a process towards a new treaty on AMR could generate what ongoing efforts have so far failed to achieve: cross-sectoral, high-level, purpose-driven political project to urgently control AMR in a manner that benefits current and future generations.

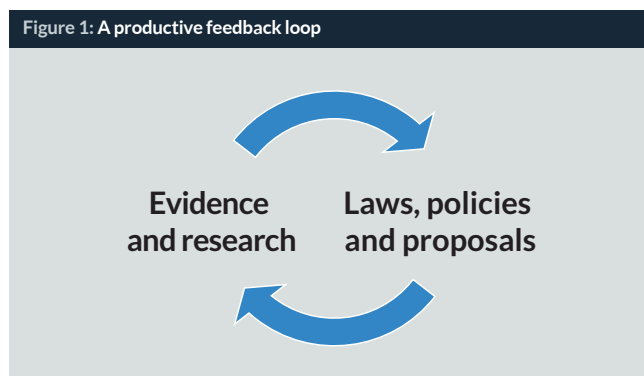
Getting it right: Achieving an AMR treaty

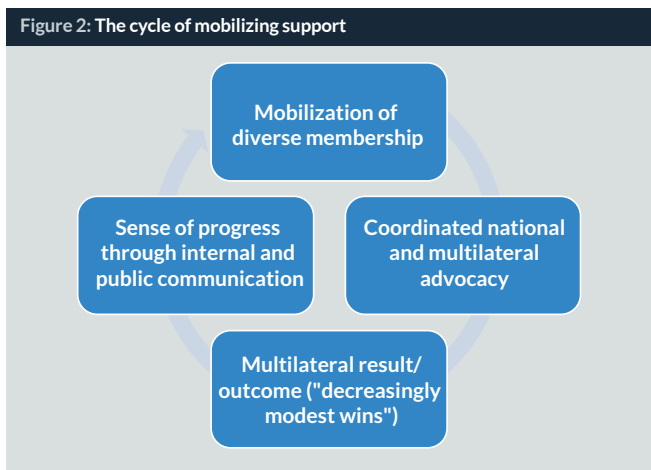
Given how states have opted to address transboundary, cross-sectoral collective action problems in the past, there is a strong case for an AMR treaty that binds states to a set of rules and standards based on a common understanding of the issue and a clear goal. Several experts and organizations have already called for an AMR treaty and have even proposed rules and provisions for such a treaty (20). These calls have intensified because of the process to develop a WHO treaty on pandemic preparedness and response (21).

Detailing the form or legal content of a new treaty prematurely may inadvertently hamper efforts to build political momentum (22). However, a new treaty should, at a minimum, include provisions to ensure needs-based global distribution of antimicrobials and preventive measures. It should strengthen the regulation of the production, marketing, sale and use of antimicrobials across sectors. Practices that are especially harmful, such as prophylactic and growth-enhancing use of antimicrobials, should be prohibited outright. A new treaty should also set up new finance mechanisms for research and development (R&D) of antimicrobials and infection prevention measures, and include provisions to reward countries that implement AMR control measures and penalize countries that decide to not join the treaty (23).

Currently, however, the key question is not primarily what a new treaty should contain, but rather how a diplomatic process towards a new treaty could be initiated. Past treaty-making efforts offer valuable insights into how a civil society-led diplomatic campaign for a new AMR treaty may be designed (24). Three lessons are particularly relevant:

Firstly, a process towards a new AMR treaty needs to be centred around a shared understanding of the nature and urgency of the problem. Marshalling evidence demonstrating the inadequacy of existing policies and practices is a first, essential, step. Available evidence suggests that AMR will lead to a social and economic upset. Yet, this evidence appears not to have challenged the prevailing, vertically-focused view of AMR as a global health issue or injected an appropriate level of urgency into policy discussions. In past processes, NGOs,





researchers and other dedicated individuals have played an important role in advancing and reframing international health policy. In some cases, these reframing activities have created productive “feedback loops” between evidence and policy (Figure 1) (25). Such “feedback loops” can help expand governments’ political scope of action by reframing the debate from a focus on what is politically feasible towards a focus on what imperatively must be done to prevent and address an unacceptable situation for humanity.

Secondly, a process towards a new AMR treaty needs a plan
 Illustration 1: Often, building new solutions requires critical engagement with existing processes. Challenging lowest-common-denominator approaches centred on achieving full consensus among states has often been a key aspect in the planning of successful diplomatic processes. Largely free from traditional institutional or bureaucratic constraints, NGOs play an important role in exploring and putting forward ambitious proposals. They cannot, however, pursue these solutions alone. Successful advocacy initiatives have therefore established flexible networks and partnerships of trust with diplomats, representatives of international organizations and other stakeholders to develop and build support for a proposed plan of action (26). Often, these partnerships have led to the creation of a “core group”; that is, a group of champion states working in close coordination with civil society and other actors towards a new treaty.

Thirdly, debates will not change, and proposals will not succeed, without a group of individuals with the capacity, ability and willingness to organize a sustained advocacy initiative around the goal of a new treaty. Often, convincing decision-makers of the feasibility of a desired goal is more challenging than stipulating the details of the goal itself. Past efforts have overcome this challenge by identifying and pursuing a series of “modest wins”, such as a statement in support of a specific proposal. The sense that “something big is happening” may mobilize further support, which in turn

Illustration 1: The plan, drafted in Vienna in 2012, for a diplomatic process to ban nuclear weapons. It outlines an ambitious timeline of key developments, a series of conferences outside established arenas and the expected number of states in support of the proposed ban treaty. Five years after this plan was drafted, the 2017 Treaty on the Prohibition of Nuclear Weapons was adopted by 122 states at the United Nations in New York

Date	Location	Key Event / Description	States in Support
March 2012	Helsinki, Finland	Inter-organizational meeting	11 members
April 2013	Vienna, Austria	NPT 50th anniversary, Nuclear Free Countries Council in final form	120
June 2013	Vienna, Austria	ICAN formation, States agree to negotiate a ban treaty	140
October 2013	Vienna, Austria	Nuclear Free Countries Council, ICAN formation	120
February 2014	Vienna, Austria	Nuclear Free Countries Council, ICAN formation	140
June 2014	Vienna, Austria	Nuclear Free Countries Council, ICAN formation	140
October 2014	Vienna, Austria	Nuclear Free Countries Council, ICAN formation	140
April 2015	New York, USA	20th anniversary of the NPT, ICAN formation	180

may help produce successively more ambitious advocacy wins (Figure 2).

The Antibiotic Campaign

For the cancer community, tackling AMR is of paramount importance. Failing to prevent the worst-case scenario will undermine decades of progress in cancer treatment and dramatically decrease cancer survival rates. An antimicrobial treaty may be necessary to prevent and address the dramatic, global repercussions of AMR. This requires a bold global advocacy and communication initiative to mobilize and coordinate actions towards a clear goal across borders and sectors. The Antibiotic Campaign, a cross-sectoral, civil society campaign coalition established in 2021 (27), aims to do just that. The Norwegian Cancer Society and its campaign partners therefore call on the cancer community to join this campaign effort. ■

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References

1. Christopher JL Murray et al. Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis, *The Lancet* 2022; 399: 629-655.
2. The Review on Antimicrobial Resistance, Tackling Drug-Resistant Infections Globally: Final Report and Recommendations, 2016.
3. See page 46.
4. See <https://www.fao.org/antimicrobial-resistance/background/what-is-it/en/>.
5. A transboundary, collective action problem is a situation in which all or many countries would be better off cooperating but fail to do so because of conflicting interests between countries that discourage joint action.
6. WHO, Fact Sheet: *Antimicrobial Resistance*, 2021.
7. Thi Thu Hao Van et al. Antibiotic use in food animals worldwide, with a focus on Africa: Pluses and minuses; *Journal of Global Antimicrobial Resistance* 2020; 20: 170-177.
8. According to the One Health High-Level Expert Panel, an advisory panel to the One Health Quadripartite made up of FAO, WHO, OIE and UNEP, defines "One Health" as "an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems. It recognizes the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and inter-dependent. The approach mobilizes multiple sectors, disciplines and communities at varying levels of society to work together to foster well-being and tackle threats to health and ecosystems, while addressing the collective need for clean water, energy and air, safe and nutritious food, taking action on climate changes and contributing to sustainable development".
9. WHO, Global Action Plan on Antimicrobial Resistance, 2015.
10. UN General Assembly, Political Declaration of the High-Level Meeting of the General Assembly on Antimicrobial Resistance: draft resolution/submitted by the President of the General Assembly, 71st session: 2016-2017.
11. Christopher JL Murray et al. 2022.
12. WHO, Comprehensive Review of the WHO Global Action Plan on Antimicrobial Resistance - Volume 1: Report, 2021.
13. Johns Hopkins Bloomberg School of Public Health and ReAct, The Global Action Plan on Antimicrobial Resistance at a Crossroads: Insights from the WHO's comprehensive review, 2022.
14. Notably the FAO, the World Organization for Animal Health (OIE) and, to a lesser extent, the UN Environment Programme (UNEP).
15. Notably through the establishment of a Global Leaders Group on Antimicrobial Resistance.
16. In *Mission Economy*, the Italian economist Mariana Mazzucato describes how a "mission-oriented" approach to public policy-making may help solve "wicked" global problems. Based on an analysis of the Apollo programme, which succeeded, in a mere eight years, in landing the first humans on the moon, Mazzucato outlines a theory of how the social, environmental, and economic challenges of the UN's Agenda 2030 for Sustainable Development could be overcome. The concept of "mission" stands at the crux of the theory, which may be understood as the mobilization of a wide range of actors across sectors around "a clear, ambitious and urgent goal with a deadline". Through a prime focus on outcomes rather than costs, public policy-making should, according to Mazzucato, motivate various sectors "to truly collaborate on investing in solutions, having a long-run view, and governing the process to make sure it is done in the public interest". Mariana Mazzucato, *Mission Economy: A Moonshot Guide to Changing Capitalism*, London: Penguin Random House UK, 2021
17. There are several reasons why legally binding intergovernmental agreements are better suited to solve transboundary, cross-sectoral collective action problems than more informal agreements, such as non-binding global action plans and political declarations. First, unless otherwise specified, treaties permanently bind states, and not merely the governments that happen to be in power when an agreement is concluded. This expands the time horizon for policy-making, which is a *sine qua non* for solving "wicked" global problems like AMR. Second, treaties are outcomes of formal intergovernmental negotiations, which deepen governments' accountability to, and ownership of, the commitments undertaken. The fact that treaties are subject to signature by heads of government or foreign ministers and, in most cases, ratification by national parliaments, encourages sustained high-level engagement, citizen involvement, and cross-sectoral collaboration within countries. Third, treaties, in contrast to informal agreements, allow for the adoption of "harder" implementation measures such as export restrictions or other penalizing measures on states not party or not compliant. Such measures are likely necessary to overcome the challenges of implementing the WHA's global action plan on AMR.
18. John Borrie, *Unacceptable Harm: A History of How the Treaty to Ban Cluster Munitions Was Won*, Geneva: United Nations Institute of Disarmament Research, 2009
19. Richard Elliot Benedick, *Ozone Diplomacy: New Directions in Safeguarding the Planet*. Cambridge: Harvard University Press, 1998; Scott Barrett, *Environment & Statecraft*. Oxford: Oxford University Press, 2003; and John Borrie 2009.
20. Already in 2010, Jonathan Anomaly argued that AMR "generate[s] a global collective action problem that only a well-designed international treaty can overcome". In a series of articles in 2015 and 2016, Steven J. Hoffman, Jon Arne Røttingen et al. argued forcefully that "an international legal framework" was needed to address the triple challenge of achieving antimicrobial access, conservation and innovation. Some have looked to other successful multilateral instruments for guidance on what to do about AMR. In 2017, Charles Kenny et al. made the case for a global AMR treaty modelled on the 1987 Montreal Protocol. In 2018, Ponnuru Padiyara of Yale School of Public Health and Hajime Inoue and Marc Sprenger argued that "legally binding governance mechanisms on AMR would be one of the most effective ways to maintain [antimicrobial effectiveness] and manage antimicrobials as a common good". More recently, in 2019, David Heymann and Emma Ross of Chatham House's global health programme made the case for a "legally binding global treaty to curb the misuse and overuse of antibiotics". A "legally binding convention or treaty such as the WHO Framework Convention on Tobacco Control (FCTC) or the FAO Treaty on Plant Genetic Resources for Food and Agriculture" has also been identified as an option for the Tripartite Global Development and Stewardship Framework (GDSF) on AMR. In its 2019 report to the UN Secretary-General, the Interagency Coordination Group on Antimicrobial Resistance (IACG) recommended that states "consider the need for new international instruments".
21. Lindsay A. Wilson et al. A Global Pandemic Treaty Must Address Antimicrobial Resistance. *Journal of Law, Medicine & Ethics* 2021; 49(4): 688-691.
22. For a discussion of how a new AMR treaty may draw inspiration from other treaties, see, for example, Susan Rogers Van Katwyk et al. Exploring models for an international legal agreement on the global antimicrobial commons: lessons from climate agreements. *Health Care Analysis* 2020; 1-22
23. For a discussion of the content and structure of an AMR treaty, see e.g., S. Hoffman and A. Behdinan. Towards an international treaty on antimicrobial resistance. *Ottawa Law Review* 2016, 47(2).
24. Examples include the processes led by the International Campaign to Ban Landmines (ICBL), the Coalition for the International Criminal Court (ICC), Child Soldiers International (CSI), the Framework Convention Alliance (FCA), the International Campaign to Abolish Nuclear Weapons (ICAN), the International Campaign Against Enforced Disappearances (ICAEID), Control Arms, the Campaign to Stop Killer Robots, the Global Coalition to Protect Education from Attack (GCPEA), and the International Network on Explosive Weapons (INEW).
25. John Borrie and Tim Caughley (eds), *Viewing nuclear weapons through a humanitarian lens*. Geneva: UNIDIR, 2013.
26. Richard Moyes and Thomas Nash, *Global Coalitions: An introduction to working in international civil society partnerships*. London: Globalcoalitions.org, 2011.
27. The Norwegian Cancer Society is in the process of launching an international advocacy campaign for an antibiotics treaty, in collaboration with Bellona, Médecins Sans Frontières Norway, the Norwegian Academy of International Law and Rethink Food. For more information, see <https://antibiotikakampanjen.no/english/>.