GENDER AND EQUITY IN ANTIMICROBIAL RESISTANCE: LANDSCAPE ANALYSIS OF INDONESIA

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List of acronyms

AMR	Antimicrobial resistance
AMU	Antimicrobial use
GEDSI	Gender, Equality, Disability, and Social Inclusion
GLASS	Global Antimicrobial Resistance and Use Surveillance System
HIV	Human Immunodeficiency Virus
KIIs	Key informant interviews
LSTM	Liverpool School of Tropical Medicine
MSM	Men who have sex with men
NAP	National Action Plan
NAP-AMR	National Action Plan on antimicrobial resistance
STIs	Sexually Transmitted Infections
TrACCS	Tracking AMR Country Self-Assessment Survey
WASH	Water, Sanitation, and Hygiene
WHO	World Health Organisation

List of key terms

Antimicrobial resistance	Antimicrobial Resistance (AMR) occurs when bacteria, viruses, fungi and parasites develop resistance to antimicrobial medicines, which become ineffective towards specific infections as a result and result in increased risk of disease spread, severe illness, disability and death.[1]
Antimicrobial use	Antimicrobial use refers to the ways that people use antimicrobials in their daily lives, the lives of their children and their animals and the social, cultural and political context in which prescribing and use occurs.[2]
Gender	The socially constructed roles, behaviours, activities, attributes and opportunities that any society assigns to men and women, boys and girls, transgender people and people with non-binary identities, and which shapes their relationships and interactions within hierarchies of power.[3] Gender varies from society to society and can change over time. Sex and gender are intertwined, with gender often being a socialised aspect of sex.[4] We recognise that gender is non-binary, but findings of studies included within this report may use binary language. Gender as a power relation shapes risk of disease, access and use of health services and disease experience.[5] Gender is just one axis of social advantage and disadvantage and intersects with other social and power structures to affect health.[7]
Gender analysis	Frameworks for gender analysis in health vary, but broadly gender analysis seeks to identify how gender norms, beliefs, roles, time allocation, division of labour, access to resources, and rules and decision making constitute gender power relations that lead to different experiences within health systems and can be further retrenched or reversed by health systems and interventions.[5,6]
Health inequities	The "unfair and avoidable or remediable systematic differences in health among population groups defined socially, economically, demographically or geographically."[7]
Intersectionality	An analytical lens to understand the ways in which different axes of power, inequity and marginalisation intersect and interact in dynamic ways to create unique and specific experiences and processes of marginalisation, including gender, race, ethnicity, age, disability, Indigeneity, refugee status and class. The concept of intersectionality emerged from black feminist theory and was coined by Kimberlé Crenshaw.[8]
Sex	Biological aspects of bodies that categorises males, females and intersex people or those who have differences of sex development and may differ from a person's gender identity.[5,6]
Social determinants of health	The conditions of daily life such as income, social protection, education, job security, working conditions, food (in)security, housing, the environment, early childhood development, social inclusion, discrimination, conflict and access to affordable health services, among other factors such as race, gender, ethnicity, age, sexuality, class and disability that lead to the unequal distribution of health-damaging or facilitating experiences, and thus health inequities and outcomes, within and across countries.[7] They are fundamentally a result of the "unequal distribution of power, income, goods, and services, globally and nationally" (the structural determinants of health) which "are responsible for a major part of health inequities between and within countries."[9]

1 WHO. Antimicrobial resistance. 2023 [cited 2025 Mar 19]. Antimicrobial resistance. Available from: https://www.who.int/news-room/fact-sheets/detail/antimicrobial-resistance

2 Drum Consortium. Drum Consortium. [cited 2025 Dec 16]. Understanding antibiotic use. Available from: https://www.drumconsortium.org/the-project/understanding-antibiotic-use.html

3 Gender and health [Internet]. [cited 2025 Dec 16]. Available from: https://www.who.int/health-topics/gender

4 *Gautron JM, Tu Thanh G, Barasa V, Voltolina G. Using intersectionality to study gender and antimicrobial resistance in low-and middle-income countries. Health Policy Plan. 2023;38(9):1017-32.*

5 Allotey P, Gyapong M, UNICEF. The gender agenda in the control of tropical diseases: A review of current evidence. 2005;

6 Morgan R, George A, Ssali S, Hawkins K, Molyneux S, Theobald S. How to do (or not to do)… gender analysis in health systems research. Health Policy Plan. 2016;31(8):1069-78.

7 World Health Organization. Incorporating intersectional gender analysis into research on infectious diseases of poverty: a toolkit for health researchers. In: Incorporating intersectional gender analysis into research on infectious diseases of poverty: a toolkit for health researchers. 2020.

8 Crenshaw KW. Mapping the margins: Intersectionality, identity politics, and violence against women of color. In: The public nature of private violence. Routledge; 2013. p. 93-118.

9 World Health Organization. Operational framework for monitoring social determinants of health equity. World Health Organization; 2024.

Executive summary

Antimicrobial Resistance (AMR) poses a critical public health problem globally, including in Indonesia. Gender and equity issues are known to drive risk of exposure to AMR and create barriers to diagnosis and recommended use of antimicrobials. However, gender and equity considerations remain marginal within existing policy and implementation frameworks at the global level. Through interviews with key stakeholders in Indonesia, this study sought to summarise the issues relating to gender and equity in Indonesia and gain a comprehensive understanding of the extent to which AMR policy, surveillance, data use, and antimicrobial stewardship incorporate gender and equity considerations, and to identify gaps in the integration of an equity perspective. Interviews were conducted with seven key informants from government, academia, civil society, and non-government organisations.

This study highlights that gender and equity are not adequately addressed in Indonesia's AMR response. The current National Action Plan on AMR (NAP-AMR) and hospital-level AMR policies do not explicitly address equity dimensions. Efforts to address AMR also remain heavily hospital-centred, with most interventions focused on inpatient care. Where equity is considered, it is often interpreted as equitable access to healthcare services. Monitoring and evaluation rely mainly on hospital accreditation processes, which track technical compliance but do not systematically assess equitable access or gendered patterns of antibiotic use.

Addressing these gaps requires the explicit integration of gender and equity into AMR policy frameworks. Stronger leadership from the Ministry of Health is needed to direct hospitals and AMR programme implementers to adopt equity-sensitive approaches. National policies should be complemented by community engagement strategies, empowering parents and local actors to participate in addressing AMR. Clinical guidelines should embed gender and equity considerations, particularly for conditions such as urinary tract infections, tuberculosis, and HIV, where sex and gender dimensions significantly shape risks and treatment outcomes. Finally, adequate funding and planning are essential to support these efforts, alongside investment in awareness-raising to improve public understanding of AMR across different social groups.

In summary, Indonesia has made progress in strengthening AMR governance, particularly through hospital-based interventions. However, without deliberate and systematic integration of gender and equity, efforts to address AMR risk reinforcing existing disparities. Embedding these principles within policy frameworks, service delivery, and monitoring systems is essential for building an effective and equitable AMR response.

1. Introduction

Antimicrobial Resistance (AMR) is increasingly recognised as a pressing global public health challenge. Globally, AMR accounted for an estimated 4.95 million deaths in 2019,[1] and projections suggest that it could cause up to 10 million deaths in 2050 if left unaddressed.[2] In Southeast Asia, Indonesia is among the countries with a high burden of AMR, with an estimated 33,000 deaths attributable to it in 2019.[3]

The drivers of AMR in Indonesia are multifaceted. Unnecessary use of antibiotics is widespread, both in healthcare facilities and in community settings. Self-medication and over-the-counter purchase of antibiotics without prescriptions remain common practice, reflecting barriers to accessing appropriate and affordable diagnostics and care, and gaps in regulation and enforcement.[4] Weak infection prevention and control, uneven access to quality medicines, imprudent antimicrobial prescribing in hospitals add to the challenge.[5-7]

Gender roles and social inequities also shape how AMR manifests in Indonesia and at a global level. Women, who often act as primary caregivers, are more likely to administer antibiotics within households and care for sick family members, which increases their exposure risk. At the same time, women and children are more likely to live in poverty and face barriers to accessing affordable health services. Men are more likely to purchase antibiotics without prescriptions and to be employed in sectors such as animal farming or waste handling, where exposure to resistant pathogens is high. These differences highlight how gender norms and inequities create distinct pathways of AMR risk. However, most AMR policies and research in Indonesia do not systematically consider these dimensions.[8,9]

Indonesia launched its first National Action Plan on AMR (NAP-AMR) in 2017,[10] followed by the 2020-2024 NAP,[11] which adopt a One Health framework, with an emphasis on surveillance, stewardship, infection prevention and control, and community awareness. While these initiatives are important, there is limited attention to how gender and social inequities affect AMR drivers and outcomes. This gap is concerning, given that groups such as women frontline health workers, elderly populations, and small-scale livestock farmers face disproportionate risk of drug-resistant infections.[8]

Global discussions are beginning to highlight the importance of integrating gender and equity into AMR governance. WHO has recently emphasised the need for policies that address these dimensions to ensure fair and effective responses.[12] Yet, like many countries, up until now, Indonesia's AMR policy framework has remained largely focused on technical and biomedical issues. There is limited evidence on how gender and equity considerations are defined, reflected, and implemented within Indonesian AMR policies.

This study seeks to understand this gap by conducting key informant interviews with policy stakeholders to examine how gender and equity are integrated in AMR governance in Indonesia. The findings aim to provide insights and learnings for mainstreaming gender and equity in Indonesia's AMR policies and strategies.

2. Aims and objectives

Aims: To identify key themes relating to gender, equity and AMR across One Health sectors in Indonesia, to identify gaps and opportunities for more inclusive action in AMR programming and provide context-specific recommendations to mainstream gender and equity in the country.

The findings of this landscape analysis should inform future areas of work and priority activities as part of the mainstreaming response.

Aligned with the GEAR up Terms of Reference (ToR), key questions guide this landscape analysis:

a. How does antibiotic resistance differentially affect men, women, children and people of diverse sex in terms of diseases and treatments over the life course?
b. Do any social groups face greater/different risks to AMR exposure, or more challenges in accessing and benefiting from the information, services and solutions to tackle AMR?
c. What are the gaps and opportunities for mainstreaming within country systems, policies and contexts and to support vulnerable groups identified above?

3. Methodology

This review followed an iterative three-step process, including a scoping review of global and country-specific literature discussing equity dimensions of AMR and antimicrobial use (AMU), analysis of national AMR-relevant policy documents, and a series of key informant interviews (KIIs) with national AMR stakeholders. The methods are presented in detail below.

3.1 Scoping review

This scoping review built on a larger, global systematic review of AMR and inequity carried out by the GEAR up consortium,[9] with country-specific research searches identified from the final search results and supplemented with additional country-specific searches.

3.2 Policy document review

We used a structured framework (Annex 1) to assess the extent to which existing national AMR policy documents mainstream equity and gender in AMR governance, surveillance, stakeholder engagement, and implementation. This specific approach was developed by GEAR up colleagues at LVCT Health, Kenya and is grounded in global guidance on gender and equity mainstreaming (Annex 2), providing a foundational framework for integrating equity considerations across AMR-related policy and surveillance tools. The framework is designed to:

1) Provide a systematic approach to reviewing AMR policies and tools through a gender and equity lens;
2) Identify areas of strength, partial integration, or absence of equity-responsive elements;
3) Support comparative analysis across documents, sectors, and countries; and
4) Inform practical recommendations for improving inclusivity in AMR governance and surveillance systems.

The framework comprises 12 core domains (Annex 3). For each domain, the framework outlined specific indicators to assess both explicit and implicit integration of gender and equity principles. Qualitative content analysis was applied to systematically determine the explicit and implicit integration of equity dimensions within policy documents. For example, explicit references included direct mentions of gender equality, vulnerable populations, or equity-related objectives; implicit references included mentions of community health promoters and workers, informal caregivers, rural populations, or underserved regions. This comprehensive approach also allowed for comparative analysis between One Health sectors (human, animal, environmental health), with the aim of highlighting strengths, gaps, and actionable opportunities for mainstreaming and equity-oriented AMR programming.

Ten policy documents were reviewed across the human health sector from 2015 to 2025. These included national NAPs and other publicly available documents.

3.3 Key informant interviews

3.3.1 Study design

This study used qualitative interviews with key informants to explore gaps and opportunities to embed gender and equity into AMR-related policies and programmes. Building on the results of the literature review and the policy document analysis, qualitative interviews were undertaken with key country-specific policy stakeholders to explore their perspectives. The interviews took place from June to August 2025.

3.3.2 Sampling and recruitment

A purposive sampling strategy was used to identify relevant key stakeholders who were engaged in AMR policymaking, AMR surveillance and control, health governance, gender and social inclusion, or service delivery. Attempts were made to include stakeholders from across One Health sectors.

The inclusion criteria for the participants were that they:

- Have worked or been directly involved in the development, implementation or monitoring of AMR-related policies and programmes at national, sub-national or international levels in the last five years.
- Have relevant experience in gender equity, particularly those who have worked on integrating gender and equity considerations into health policies or AMR-specific programmes.
- Are willing to participate in the study, provide informed consent, and be available for the interview within the specified study timeline

Ten participants were invited, of whom seven agreed to take part (three men and four women). All participants were from the human health sector, including two from government, three from academia, one from a non-government organisation, and one from a civil society organisation (Table 1). Six of the seven participants had a medical background, with half working in hospitals or clinical settings. The three invitees who did not respond to the invitation were those working in the field of gender and equity, i.e., vulnerable populations, women living with HIV, and gender research.

Table 1. Interview participants

Participant (code)	*Sex*	*Sector*
Participant 1 (P1)	*Woman*	*Academia*
Participant 2 (P2)	*Man*	*Academia*
Participant 3 (P3)	*Man*	*Academia*
Participant 4 (P4)	*Woman*	*Civil society*
Participant 5 (P5)	*Woman*	*Non-government*
Participant 6 (P6)	*Man*	*Government*
Participant 7 (P7)	*Woman*	*Government*

3.3.3 Instrument

A generic interview guide was developed by Liverpool School of Tropical Medicine (LSTM) for all GEAR up country partners and was adapted to the Indonesian context. The guide encompassed several key domains, including:

- Existing AMR policies and strategies to curb AMR
- The roles and responsibilities of participants in relation to AMR, and gender and equity programmes
- Experiences and reflections on policy formulation and programme implementation within AMR contexts
- Perceived gaps, challenges, and opportunities for embedding gender and equity considerations into AMR policies and interventions to address AMR
- Identification of gender- and equity-related barriers to accessing antibiotics and healthcare services
- Perspectives on cross-sectoral collaboration, stakeholder engagement, and the prevailing discourse concerning gender and equity in AMR

3.3.4 Data collection and analysis

Data collection was conducted online via video conferencing. The duration of key informant interviews ranged from 44 to 87 minutes. All interviews were conducted in Indonesian, audio-recorded with participants' consent, transcribed verbatim, and subsequently translated into English. Audio files were stored on a password-protected device, while transcripts were saved in a dedicated folder on the LSTM SharePoint, accessible only to the authorised GEAR up research team.

Thematic coding employed a deductive-inductive approach, informed by the study's conceptual framework and insights from the key informants. Analysis focused on themes such as perceptions of gender and equity in AMR, AMR policy-making processes, broader gaps and challenges in integrating gender and equity, as well as potential ways forward.

3.3.5 Ethical considerations

This study was conducted in compliance with ethical standards for health systems research. Ethical approval was obtained from the LSTM Research Ethics Committee and the Ethics Committee on Social Studies and Humanities National Research and Innovation Agency (BRIN) Indonesia No. 098/KE.01/SK/02/2025. All participants involved in the interviews were informed of the purpose of the study and provided informed written or verbal consent prior to participation.

4. Findings

4.1 Findings from scoping review

4.1.1 Global-level findings

Biological susceptibility to infection is increased by malnutrition, which disproportionately affects low-income groups, women and girls, due to a combination of poverty, inequitable food systems and gender norms.[13-15] Additionally, gender power relations that drive sexual violence and limit women's reproductive rights lead to HIV among women.[16] Inequitable vaccine access leads to inequitable spread of resistant infections and demand for antibiotics.[17,18] Unequal exposures to resistant infection and antibiotics primarily occur through the conditions of living and livelihoods associated with poverty and marginalisation. These include overcrowding, lack of ventilation, and limited access to clean water and quality sanitation.[19-23]

Livelihoods also produce inequitable exposures to resistant infections and to antibiotics and are heavily influenced by socioeconomic and gender inequities. For example, some people are exposed to the antibiotics used in animals through their livelihoods in farming and food production.[24] Specific roles in animal care are often gendered.[25,26] Occupations in sex work also place people at high exposure to drug-resistant sexually transmitted infections such as gonorrhoea, syphilis and HIV.[27,28]

Barriers to accessing health services are shaped by occupation, income, agency, gender and geography. In particular, low-income communities face barriers in accessing formal health and fluctuating ability to pay.[29-32] In many locations, stock-outs may prevent access to recommended antibiotics.[33,34] Gendered household dynamics can also act as barriers to health-seeking for women and mothers.[12,29] Furthermore, experiences of discrimination can act as barriers to seeking care.[29] These same factors can create barriers to continuation of drug treatment, particularly where treatment schedules are long.[31,35,36] We identified less research on how inequities and socioeconomic factors influence AMR and AMU in animal populations, highlighting a significant research gap. Similar barriers to using antimicrobials as recommended are seen in animal health to the ones in the human health domain.[37-39] Prescribers are also influenced by economic pressures and health system resourcing.[39,40,41]

People's access to information and education about AMR and antibiotic use is influenced by wider trends in access to formal education, occupational training and socioeconomic status.[41,42] Those who can visit health facilities more often tend to have more access to AMR information. Those who face barriers to accessing formal health services face barriers in accessing information on AMR. Poorly labelled medicines in areas of Africa and Asia also limit people's ability to make decisions about recommended antibiotic use.[43] Knowledge sharing is also highly gendered, with women often expected to be responsible for children's health, but less likely to access formal health services, beyond community health workers, than men in some contexts.[33,44]

Global evidence shows that health expenditure associated with AMR can lead to catastrophic costs for those living in poverty or with low incomes most significantly.[45,46] Some also find that disclosing diagnoses can lead to reduced social support, loss of relationships, and even being expelled from home[47,48] and this stigma can impact women more.[49]

4.1.2 Indonesia specific findings

Studies consistently show that antibiotic knowledge and use are shaped by intersecting social factors in Indonesia. Poorer understanding about AMR persist among women, older adults, and those with lower education and income.[50] In antibiotic practice, barriers to recommended use are reportedly more common among men, rural populations, older people, and people with lower socio-economic status.[51]

Regarding access, evidence suggests urban residents and those with higher education and easier access to primary care tend to have better antibiotic knowledge but are also more likely to self-medicate. In contrast, people in rural and underserved areas may be less likely to complete antibiotic courses due to limited access to care.[52] Further, widespread non-prescription dispensing in private drug outlets disproportionately affects populations with limited access to formal healthcare.[4]

Gendered caregiving responsibilities shape inequitable AMU. High levels of non-adherence among caregivers administering antibiotics to children reflect time constraints, misconceptions, and medicine-sharing practices, increasing children's vulnerability to treatment failure and long-term AMR, particularly in resource-constrained households.[53]

Evidence shows that women, particularly those who are poor and living in remote areas, face structural barriers to maternal healthcare that shape their exposure to infection and antibiotics. Poor women in rural and remote areas face persistent barriers to maternal healthcare, including distance, cost, and weak infrastructure.[54,55] These increase reliance on informal care and create an increased risk of inappropriate AMU during pregnancy and childbirth. Women undergoing caesarean sections experience particularly high antibiotic exposure,[56] underscoring a gendered AMU context with direct implications for AMR risk.

Men who have sex with men (MSM) and female sex workers face heightened and interconnected risks of HIV, Sexually Transmitted Infections (STIs), and AMR due to stigma, discrimination, and social exclusion. Many young MSM conceal their sexual identity because of fear of rejection by family and peers, which, together with broader restrictions on social acceptance, policy, and rights, contributes to delayed care-seeking and higher-risk behaviours.[57,58] Female sex workers faced limited access to condoms and HIV/AIDS services, as well as HIV stigma or fear of being labelled as HIV positive.[59,60] These conditions increase the likelihood of repeated or untreated infections and inappropriate antibiotic use for STIs, heightening AMR risk.[57-60]

At the community level, women play a central role in AMU-related practices, often without adequate support. Community health cadres, predominantly women, are positioned as key actors in promoting rational antibiotic use, yet their work relies heavily on unpaid or underpaid labour with limited decision-making authority.[55,61] Similar challenges affect Posyandu[10] services, healthcare services catering for pregnant women and children under five, which are largely staffed by female community health workers but remain under-resourced, particularly in rural areas.[55,62]

Within healthcare facilities, antimicrobial stewardship implementation reflects hierarchical power structures. Authority over prescribing and stewardship is concentrated among senior clinicians and certain specialties, positions often dominated by men, while junior doctors, nurses, and pharmacists, many of whom are women, have limited influence despite close patient contact.[63,64] These inequities are reinforced by systemic constraints within healthcare settings that drive high antibiotic use, such as inadequate infrastructure, weak diagnostics, insurance limitations, and profit pressures.[7,62-65]

Finally, the review highlights critical gaps in national AMR surveillance systems. Reliance on hospital-based data from GLASS (Global Antimicrobial Resistance and Use Surveillance System), TrACCS (Tracking AMR Country Self-Assessment Survey), and the Indonesia Health Survey limits understanding of gendered and community-level AMU patterns. The absence of routine gender-disaggregated and equity-contextualised data constrains the development of equity-responsive AMR interventions.[8]

4.2 Findings from the policy analysis

4.2.1 National AMR policy

The findings are presented in a structured framework comprising 12 core domains (Table 2). The reviewed policies include the first AMR policy endorsed in 2015 to the present date. Indonesia has a clear national policy framework for AMR, including One Health NAP-AMR, ministerial regulations for hospital AMR programmes, and national antibiotic use and stewardship guidance. However, only one of ten policy documents includes gender and equity considerations in the development plans and strategies, which is the National Strategy for Antimicrobial Resistance Control in the Health Sector 2025-2029.[66] In this document, Gender, Equality, Disability, and Social Inclusion (GEDSI) were explicitly included in 'prevention of infectious diseases' pillar, under intervention strategies that address universal access to Water, Sanitation, and Hygiene (WASH) and waste management to reduce AMR. Equity considerations are also found in the 'appropriate and quality-assured treatment' pillar, under the intervention strategies relevant to regulations on non-prescription antimicrobial sale. This strategy emphasises the need for policies that balance antibiotic restriction with fair access to essential medicines, particularly for rural and marginalised populations.[66]

Among the 12 domains, seven are included in this policy:

1. Policy vision and principles, in which gender and equity are explicitly articulated through a people-centred approach.
2. Alignment with legal and normative frameworks, where GEDSI considerations are included in prevention of infectious diseases strategies.
3. Inclusion of gender and equity objectives, ensuring that WASH policies, standards, and interventions address the needs of vulnerable and marginalised groups and fair access to essential medicines for those in remote and underserved areas.
4. Stakeholder inclusion, with specific references to vulnerable and marginalised groups, and communities in remote and underserved areas with limited access to healthcare, including antibiotics.
5. Intersectionality, where the policy recognises that although Indonesia enforces prescription-only regulations for antimicrobials, people in remote and underserved areas often have limited access to healthcare.
6. Implementation strategies, aiming to improve access to healthcare (including antibiotics) for rural and marginalised populations by balancing antibiotic control with equitable access to essential medicines, and promoting appropriate and quality-assured antibiotics.
7. Capacity strengthening, focused on improving the awareness of health professionals regarding responsible and equity-focused considerations of antibiotic use.

The following five domains are not yet explicitly addressed in the policy:

1. Surveillance and data practices which incorporate equity-sensitive AMR/AMU surveillance tools disaggregated by social variables.
2. Monitoring and evaluation, which incorporates gender-sensitive indicators and mechanisms to track equity outcomes and guide adaptive programming.
3. Research and innovation, supporting studies that explore gendered AMR dynamics or the needs of underrepresented groups in research design.
4. Communication and advocacy, ensuring messages that consider gender norms, cultural contexts, and accessibility across diverse groups.
5. Provisions for equity-focused financing and sustainable gender-responsive investments in AMR.

10 Community-based integrated health service post

Table 2. National AMR policies in human health sector in Indonesia

No	Document title	Year	Scope	Policy vision and principles	Alignment with legal and normative frameworks	Gender and equity objectives	Stakeholder inclusion	Intersectionality	Implementation strategies	Surveillance and data practices	Monitoring and evaluation	Research and innovation	Capacity strengthening	Communication and advocacy	Financing and sustainability
1	Decision of the Director General of Advanced Health Services Number HK.02.02/D/3423/2025 concerning Guidelines for the Monitoring and Evaluation of Antimicrobial Use through Point Prevalence Surveys in Hospitals (Keputusan Direktur Jenderal Kesehatan Lanjutan Nomor HK.02.02/D/3423/2025 tentang Pedoman Pengawasan dan Evaluasi Penggunaan Antimikroba Melalui Survei Prevalensi Waktu Tertentu di Rumah Sakit) [51]	2025	AMU surveillance	X	X	X	X	X	X	X	X	X	X	X	X
2	National Strategy for Antimicrobial Resistance Control in the Health Sector 2025-2029 (Strategi Nasional Pengendalian Resistansi Antimikroba Sektor Kesehatan Tahun 2025-2029)[50]	2024	AMR mitigation strategies using the WHO people-centred approach	✓	✓	✓	✓	✓	✓	X	X	X	✓	X	X
3	Decree of the Minister of Health of the Republic of Indonesia Number HK.01.07/ Menkes/1596/2024 concerning Hospital Accreditation Standards (Keputusan Menteri Kesehatan Republik Indonesia Nomor HK.01.07/Menkes/1596/2024 tentang Standar Akreditasi Rumah Sakit)[52]	2024	Assessment of the existence of AMR policy within hospital accreditation	X	X	X	X	X	X	X	X	X	X	X	X
4	Regulation of the National Agency of Drug and Food Control Number 8 of 2023 concerning Guidelines for the Evaluation of the Efficacy and Safety of Antibacterial Medicines (Peraturan Badan Pengawas Obat dan Makanan Nomor 8 Tahun 2023 tentang Pedoman Penilaian Khasiat dan Keamanan Obat Antibakteri)[53]	2023	Guidance on effectiveness and safety assessment of antibacterials	X	X	X	X	X	X	X	X	X	X	X	X
5	Regulation of the Coordinating Minister for Human Development and Cultural Affairs of the Republic of Indonesia Number 7 of 2021 concerning the National Action Plan for Antimicrobial Resistance Control 2020-2024 (Peraturan Menteri Koordinator Bidang Pembangunan Manusia dan Kebudayaan Republik Indonesia Nomor 7 Tahun 2021 tentang Rencana Aksi Nasional Pengendalian Resistensi Antimikroba Tahun 2020-2024)[11]	2021	One Health NAP-AMR for human health, animal health, and environment sectors	X	X	X	X	X	X	X	X	X	X	X	X

No	Document title	Year	Scope	Policy vision and principles	Alignment with legal and normative frameworks	Gender and equity objectives	Stakeholder inclusion	Intersectionality	Implementation strategies	Surveillance and data practices	Monitoring and evaluation	Research and innovation	Capacity strengthening	Communication and advocacy	Financing and sustainability
6	Guidelines for Antimicrobial Stewardship in Hospitals, 1st Edition (Panduan Penatagunaan Antimikroba di Rumah Sakit Edisi 1)[67]	2021	Guidelines to implement antimicrobial stewardship in hospital	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
7	Regulation of the Minister of Health Number 28 of 2021 concerning Guidelines for Antibiotic Use (Peraturan Menteri Kesehatan Nomor 28 Tahun 2021 tentang Pedoman Penggunaan Antibiotik)[68]	2021	Guidance on antibiotic use	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
8	National Action Plan for Antimicrobial Resistance Control 2017-2019 (Rencana Aksi Nasional Pengendalian Resistensi Antimikroba Tahun 2017-2019)[10]	2017	One Health NAP-AMR for human health, animal health, and environment sectors	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
9	Regulation of the Minister of Health Number 27 of 2017 concerning Guidelines for Infection Prevention and Control in Health Care Facilities (Peraturan Menteri Kesehatan Nomor 27 Tahun 2017 tentang Pedoman Pencegahan dan Pengendalian Infeksi di Fasilitas Pelayanan Kesehatan)[69]	2017	Guidelines for infection prevention and control in healthcare facilities	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
10	Regulation of the Minister of Health Number 8 of 2015 concerning the Antimicrobial Resistance Control Programme in Hospitals (Peraturan Menteri Kesehatan Nomor 8 Tahun 2015 tentang Program Pengendalian Resistansi Antimikroba di Rumah Sakit)[70]	2015	Regulation to establish hospital AMR programme	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗

✗: Indicates that the document does not explicitly reference the domain in question. It does not mean that the domain is absent in practice or that it could not be inferred.

✓: Indicates that the document explicitly references the domain in the question.

4.3 Findings from the key informant interviews

4.3.1 Key themes

The themes from key informant interviews are:

1) AMR policy, stakeholders, and the policy development processes;
2) Policy implementation, monitoring, and evaluation;
3) Perceptions of equity and vulnerable groups; and
4) Mainstreaming gender and equity in AMR policy.

4.3.2 AMR policy, stakeholders, and the policy development processes

Interview participants (P1 and P3) reported that the overarching policy framework for AMR in Indonesia is the NAP-AMR 2020-2024, which is currently under revision. In line with the Global Action Plan on AMR, the NAP-AMR outlines six strategic priorities, guidance on implementation, budgeting, coordination mechanisms, monitoring evaluation, as well as clarifying the roles of different stakeholders. Stakeholders engaged in the development and implementation of the NAP come from diverse backgrounds and have different roles. Within the human health sector, they include the Ministry of Health, the National Agency for Drug and Food Control, local health officials, academics from teaching hospitals, medical professional associations, clinicians working in hospitals, and civil society organisations that represent community voice (P1, P3, P4, P5, P6, and P7).

In line with the One Health approach, consultations during the NAP development process also involved a broad range of actors, such as the Ministry of Agriculture, the Ministry of Environment and Forestry, the Ministry of Marine Affairs and Fisheries, the Ministry of Education and Culture, the Ministry of Research and Technology, the Indonesian National Armed Forces, and the Police. Additionally, stakeholders directly involved in policy implementation were consulted, including the Indonesian Veterinary Medical Association, the Animal Drug Association, and livestock farmers (P1 and P5).

The current AMR policy in human health primarily targets hospitals, while discussions continue about integrating primary healthcare facilities. As stated by participants, AMR governance is operationalised through the Regulation of the Minister of Health No. 8 of 2015, which mandates all hospitals to establish and implement AMR programmes.

> *"... the regulation is Minister of Health Regulation (Permenkes) No. 8 of 2015 concerning the implementation of AMR programmes in hospitals. This regulation mandates that this programme must be implemented; article 6 specifically requires hospitals to comply." (P2, man, academia)*

This policy is reinforced by relevant infection prevention and control regulations, national antibiotic use guidelines, and antimicrobial stewardship guidelines for hospitals, as reflected in the following quotes.

> *"... the Regulation No. 28 of 2021 on promoting the use of antibiotics outlines indications for antibiotic use, as well as antibiotic choices for specific infections. This is specifically useful for healthcare facilities and doctors working in remote areas who do not have access to microbiological data." (P1, woman, academia)*

> *"There is also a more detailed technical guideline - the 2021 Antibiotic Stewardship Guidelines from the Ministry of Health - a derivative of the 2015 policy. It includes more detailed step-by-step stewardship implementation." (P3, man, academia)*

AMR policies in human health are reinforced by 2025-2029 National AMR Strategy, which adapts the WHO people-centred approach. Indonesia has introduced an additional foundational action, an external evaluation system, to strengthen implementation and accountability (P5 and P7).

> *"We have adopted and adapted the WHO people-centred approach, plus one element that I introduced. The WHO approach only has two pillars, but in our case, we added the third pillar which is external evaluation systems through accreditation and local monitoring and evaluation carried out by the local health offices." (P7, woman, government)*

Hospital accreditation, one of the external evaluation mechanisms, has also been identified as an important facilitator for the effective implementation of AMR programmes (P2 and P7).

> *"...the third foundation is accreditation and monitoring and evaluation by the local health offices. In my view, this is a strong driver of AMR policy implementation." (P7, woman, government)*

The policy development processes in Indonesia follow a defined pathway, as emerged from the interviews. New policies may be mandated by legislation or government regulations, or they may arise from gaps identified through field observations, evaluations, or research. The process typically begins with the Ministry of Health recognising these needs, followed by internal brainstorming and consultations with academics for technical expertise. Policy implementers, e.g., healthcare providers at the health facility level or community, are engaged in the subsequent policy formulation stage. Highly technical or operational policies are piloted before formal adoption to ensure their feasibility for implementation. Policy revisions are initiated when existing regulations become outdated or inadequate, and the revision process generally mirrors that of new policy development (P6 and P7).

4.3.3 Policy implementation, monitoring, and evaluation

Most of the targets of AMR programmes and interventions are directed at hospital inpatient care. There have not been many activities, training, and interventions in the primary healthcare facilities and community settings, as reflected in the following quote:

> *"Most of the targets of AMR programmes are still directed at hospital inpatient care. The flow and systems are also structured very much around inpatient settings–like the prescribing practices of attending physicians. There hasn't been much training at the primary healthcare facilities… Private clinics and direct access points like pharmacies or pharmacists are still quite far from being addressed when it comes to antibiotic use." (P3, man, academia)*

Evaluation of AMR programme implementation in Indonesia has so far relied heavily on external mechanisms, particularly hospital accreditation. One participant explained how the hospital accreditation body was engaged to monitor AMR activities.

> *"We then asked our colleagues from the hospital accreditation body to help monitor the AMR programmes implementation in hospitals through the accreditation process. They agreed to include assessment elements as evaluation indicators, provided there was a legal foundation." (P2, man, academia)*

Within hospital accreditation systems, there are promising broader equity considerations, requiring hospitals to demonstrate responsiveness to the needs of vulnerable populations.

> *"…when we talk about accreditation standards regarding vulnerable groups or special populations, we are addressing distinctions that are based on physical conditions. In this context, we have specific populations that must be treated differently. For instance, we provide different access for the elderly. We also offer special protections for children and infants. Similarly, patients with disabilities also have their specific considerations." (P7, woman, government).*

4.3.4 Perceptions of equity and vulnerable groups

Interviews indicated there is misunderstanding about equity, interpreted by six out of seven participants, as equality or the absence of discrimination in the provision of healthcare services. Participants consistently emphasised that patients receive healthcare services without discrimination and have same access to antibiotics when needed, regardless of sex, socio-economic background, or social status. The argument was that policies already ensure equal access, with no explicit gender-based differences in implementation, including access for those in remote areas. Equity was therefore viewed primarily as uniformity of access to healthcare services, rather than as recognition of differentiated needs, and there was little recognition of the structural inequities that influence disease exposure and health seeking.

> *"… there must not be any discrimination in healthcare services whether the patient is men or women, rich or poor, whether they are, let us say, a drinker or not, a criminal or not–it must not matter in medical practice. Rational use of antimicrobials must follow ethical principles and guidelines that apply to everyone equally." (P1, woman, academia)*

> *"We do not make distinctions… The policy we have applies to everyone – to all patients accessing healthcare services – with the hope that everyone, all community members, can receive the same quality of service… For example, someone requires tertiary health services but happens to live in a remote area, then we provide access to such services through the provision of boat or air ambulance, which is available in certain regions." (P7, woman, government)*

Despite this misunderstanding, participants highlighted that both biological and social factors shape how different groups experience the risks of infection and drug-resistant infections. Men and women, as well as children, the elderly, patients with weakened immune systems, sex workers, patients, and livestock farmers, were all identified as populations facing distinct vulnerabilities. Women were often perceived as more likely to seek healthcare and therefore to use antibiotics more frequently, which could increase their risk of AMR.

> *"Women tend to visit doctors more often, are more frequently exposed to illness, and possibly use antibiotics more often." (P3, man, academia)*

Women's reproductive and hormonal factors were also seen as contributors to heightened vulnerability, with one participant emphasising that they are "more prone to urinary tract infections and complications during pregnancy" (P4, woman, civil society). In addition, extremes of age were identified as problematic for antimicrobial stewardship, with neonates, infants, and the elderly often receiving antibiotics more liberally due to weakened immune systems and perceived risks of treatment failure (P3 and P4).

Participants also underlined that immunocompromised groups, such as cancer patients, transplant recipients, those with autoimmune diseases, or people living with HIV, require frequent antibiotic access, increasing their AMR risk (P3 and P7). Other groups described as facing heightened risks included MSM, sex workers, and those with recurrent sexually transmitted infections, who are often prescribed antibiotics pre-emptively.

"HIV or MSM populations... are more frequently exposed to antibiotics because even with minor sexually transmitted infections, they are treated with antibiotics... Female patients, sex workers–they access antibiotics more frequently than others." (P3, man, academia).

One participant highlighted that AMR risk from antibiotic overuse is closely tied to inequities and power imbalances between doctor and patient. Patients are often blamed for self-medicating, yet this behaviour reflects doctors' routine overprescription and strong social authority in a hierarchical culture. Further, the perception of doctors as unquestionable figures limits patients' ability to seek clarification or make informed decisions.

"The main issue with AMR is this one thing: overuse! Don't blame patients who buy antibiotics themselves when they feel sick. Why do they do that? It is because every time they are sick, the doctor prescribes antibiotics. Meanwhile, doctors are seen as second to God who hold a high social position. In our patriarchal culture, you can feel the doctor's aura: "Don't ask questions. If you don't trust me, go find another doctor." When we are sick, we are in a weak position. I often say, "Ironically, you (patient) pay a lot, yet you don't even have the right to ask questions." (P4, woman, civil society)

Occupational exposure was another important aspect that was mentioned. Livestock farmers, predominantly men in the Indonesian context, were seen as particularly vulnerable due to close and frequent contact with animals and AMU in farming (P4 and P5). This emphasis on occupational and environmental pathways reinforced participants' view that vulnerability to AMR cannot be explained solely by biological differences but must also account for social roles, behaviours, and structural inequalities.

4.3.5 Mainstreaming gender and equity in AMR policy

Interviewees emphasised that gender and equity dimensions have not been explicitly integrated into the current NAP-AMR nor the AMR policy for hospitals. However, they pointed out that the 2025–2029 National AMR Strategy, adapted from the WHO's people-centred approach framework, has begun to include gender and equity considerations.

"...the national strategy on AMR document already has a dedicated section regarding gender and equality. However, for the cross-sectoral NAP-AMR, gender and equality are still not the main focus... When we discussed the draft legislation on AMR, gender or inequity had not yet been taken into account." (P5, woman, non-government)

Participants pointed out that a key barrier to integration is policymakers' limited knowledge and understanding of what gender and equity mainstreaming involves and how it could be translated into practical strategies and actions within AMR policy implementation

"...the challenge is related to a lack of understanding regarding the gender concept and gender-related issues within the policymakers." (P6, man, government)

"As for myself, based on my personal experience working at the Ministry of Health, I would say we are not significantly exposed to these gender roles at the grassroots level. Further, it is not only about planning; it also concerns how the implementation is carried out. When we speak about vulnerable groups, there are always specific challenges involved." (P7, woman, government)

These knowledge gaps are compounded by broader systemic barriers, including the already complex structure of the NAP-AMR, competing national policy priorities, and the visibility of equity compared to the broader AMR priorities at the national level. Together, these make the integration of gender and equity concerns appear less urgent or feasible. As a result, national AMR policy has yet been formulated with detailed attention to gender or equity dimensions.

"... if we look at the current NAP, there are eight pillars, eight topics. It is already quite a lot, and if we were to add gender into that, it might feel a bit overwhelming for the policymakers." (P5, woman, non-government)

"...for the policymakers, this is still "too micro-level" compared to the macro-level aspects they are aiming for in terms of achievements." (P3, man, academia)

These interviewee statements show that there is a lack of understanding that equity mainstreaming is a cross-cutting process (as opposed to an additional stand-alone process). There is also a perception that gender and equity are 'micro level' issues as opposed to structural issues that affect all aspects of AMR policy and practice. Mainstreaming gender and equity into AMR policy requires deliberate strategies that cut across multiple levels of governance and implementation. Participants highlighted several opportunities to advance this agenda. The first step is ensuring that policy frameworks explicitly recognise gender and equity as priorities. This includes naming these dimensions in the NAP-AMR and related policy documents. Without explicit mention, efforts to address inequities risk being overlooked and not implemented.

"... for example, AMR regulation calls for special precautions for these specific population groups. That way, the implementers just follow what is instructed by the Ministry of Health and what needs to be done on the ground is clearer and easier to implement." (P3, man, academia)

A top-down approach was seen as essential in an Indonesian context, where the Ministry of Health takes the lead in mandating gender and equity considerations across all AMR-related programmes. According to interviewees, this would involve issuing clear instructions and guidelines to hospitals and key implementers, ensuring that these principles are embedded in planning, implementation, and monitoring processes.

> *"The way we operate is still very top-down. Those on the ground will not move unless there is a regulation and a directive from 'above'. The ministry usually issues instructions to local- or regional-level actors. Then, they will follow accordingly." (P5, woman, non-government)*

> *"The key point is each programme should at least have some activities with a clear gender analysis pathway." (P6, man, government)*

At the same time, some interviewees recognised that top-down directives should be complemented by bottom-up approaches that emphasise community engagement and empowerment. For example, programmes that work directly with parents can improve awareness, while also challenging gendered norms that often position women as primary caregivers without adequate support:

> *"This is where we started to see gender inequity because of gender roles. Who has greater access to the [health] concept, the control, and the decision-making? For example, 'I don't agree with our child getting vaccinated.' If the mother is informed but the father is not, that's a problem. Gradually we shifted the focus not just to empowering mothers, but parents." (P4, woman, civil society)*

Raising awareness and increasing knowledge in the community were seen as equally critical, alongside the need for public education campaigns to be tailored to specific populations at risk of non-recommended antibiotic use.

> *"It can work through awareness and education which is raising awareness so that the populations we consider high-risk for antibiotic access can practice more prudent use." (P3, man, academia)*

Interviewees suggested that technical guidelines must also reflect gender and equity considerations, with the development of antibiotic treatment protocols for conditions such as urinary tract infections, tuberculosis, and HIV offering an important opportunity to embed equity into clinical practice. For example, guidelines could emphasise gender-specific risk factors, diagnostic challenges, or barriers to care that affect how these conditions are managed. Such measures would ensure that gender and equity are not only policy commitments, but also practical tools embedded in everyday healthcare delivery.

> *"...we could include the gender and equity aspects in the guidelines so that people become aware of them. Here's how I imagine it. For example, HIV guidelines recommend screening for HIV in specific groups: (1) TB-positive individuals; (2) men who have sex with men; and (3) others. So, there are specific subjects listed for HIV testing to push doctors to always remember to associate those subjects with HIV risk. Now, if something like that were tailored into a sort of flagged strata, like: 'Be cautious when prescribing antibiotics to these groups,' that could actually carry some weight–if it can be included in the existing guidelines." (P3, man, academia)*

Finally, interviewees emphasised that sustained progress depends on sufficient funding and careful planning, with gender and equity mainstreaming not being possible without dedicated resources to support training, programme design, and evaluation. This includes allocating funds for gender-sensitive interventions, monitoring frameworks, and research to generate disaggregated data that can inform responsive policies.

5. Summary of findings

This study sheds light on the interplay between policy, gender, and equity in the context of AMR governance in Indonesia. The findings show that while Indonesia has established a national framework for AMR policy, i.e., NAP-AMR, ministerial regulations, and National AMR Strategy using people-centred approach, gender and equity remain marginalised in the policy development processes and implementation.

5.1 Power dynamics and gendered vulnerabilities in antibiotic use

The findings highlight how power hierarchies within clinical settings influence patterns of antibiotic prescribing and use. Patients often have a weak position in relation to doctors. The quote that patients "pay a lot, yet don't even have the right to ask questions" reflects an unequal interaction shaped by professional authority, social status, and cultural norms. This dynamic may drive inappropriate antibiotic use through unnecessary prescription which increases AMR risk.

Gender also intersects with other forms of vulnerability. Women have greater contact with healthcare services due to caregiving roles and reproductive health needs, such as pregnancy and urinary tract infections. This may lead to more frequent antibiotic use which increases AMR risk. Marginalised populations, including people living with HIV, sex workers, and MSM, often experience intersecting social and health-related vulnerabilities that make them more susceptible to infections and use antibiotics more frequently.

5.2 Gender and equity blind spots in AMR policy

Although the NAP-AMR adopts One Health approach and involves diverse stakeholders, including the Ministries of Health, Environment, and Agriculture, as well as academics and civil society, the policy-making processes have yet to incorporate gender and equity dimensions. The interpretation of "equity" as "equal access" or "absence of discrimination" reflects a limited understanding that overlook how sociocultural norms, gender roles, structural barriers, and power hierarchies shape AMR risk. Similar gaps have been documented globally where gender-blind AMR mitigation strategies often fail to address the social determinants that create barriers to appropriate AMU and drive resistance.[9,71]

Further, policy development processes in Indonesia are concentrated among national-level stakeholders, such as government ministries, academics, and hospital clinicians, whose perspectives may not reflect the everyday realities of certain population groups, for example, rural communities, sex workers, and people living with HIV. The hospital-based focus of AMR implementation further reinforces this bias where stewardship and monitoring mechanisms are mainly focused on inpatient settings rather than in primary care and the community. Consequently, the gendered and social dimensions of antibiotic use and AMR risk in these latter contexts may be overlooked.

5.3 Strategies for mainstreaming gender and equity

Participants identified that gender and equity are still viewed as "micro-level" issues, often not prioritised within national AMR policy and targets. The inclusion of gender and equity in the 2025-2029 National AMR Strategy is a promising development, but it has to be translated into concrete actions through guidelines, monitoring systems, and adequate funding.

Key enablers to move forward with gender and equity mainstreaming in Indonesia include:

1) Ensuring that AMR policy documents and technical guidelines explicitly reference gender and equity;
2) Integrating gender dimensions in antibiotic prescribing guidelines by highlighting higher-risk population groups;
3) Strengthening bottom-up community engagement to challenge gender norms and to improve participatory decision-making;
4) Generating sex-disaggregated and intersectional data to inform tailored interventions; and
5) Securing dedicated funding for gender-responsive AMR training, monitoring, and evaluation.

5.4 Strengths and limitations

The strength of this study lies in its use of three complementary approaches to provide a comprehensive picture of the gaps and opportunities for mainstreaming gender and equity in AMR policy in Indonesia. However, community-level perspectives were underrepresented, as most discussions focused on hospital settings, limiting insights into AMR and antibiotic use in primary care and community contexts. In addition, the non-participation of three invitees with expertise in gender and equity may have reduced the depth of analysis of broader social and equity dimensions of AMR. Finally, though we sought to get insights from a range of stakeholders across animal and environmental health, they were unavailable for interview. The results should be interpreted with these limitations in mind.

6. Key recommendations to mainstream gender and equity in AMR

The findings from the scoping review, policy analysis, and KIIs indicate that AMR governance in Indonesia is shaped not only by clinical factors, but also by power relations, gendered roles, and structural inequities across healthcare and community settings. While Indonesia has established a strong national AMR framework, gender and equity considerations remain insufficiently integrated into policy design, implementation, surveillance, and service delivery. The following recommendations respond directly to gaps identified in how gender, equity, and power relations shape AMU and AMR risk in Indonesia. In line with WHO guidance on addressing gender inequalities in national AMR action plans, 12 recommendations are structured into short-, medium-, and long-term actions across AMR policy, AMR surveillance, and access to infection prevention, diagnosis, and management.12

- Short-term - recommendations that are relatively feasible and can be implemented in the next one to two years;
- Medium-term - recommendations that require longer timeframes to be implemented such as in the next three to four years due to, for example, capacity constraints or scale of change;
- Long-term - recommendations that are more aspirational and may require five or more years to achieve.

6.1 AMR policy, advocacy, and governance

The findings show that AMR governance in Indonesia remains concentrated among national-level government and senior clinical actors, with limited participation from community representatives and marginalised groups. Gender and equity are often treated as "micro-level" concerns, rather than as determinants of AMR risk, which risks overlooking gendered vulnerabilities in antibiotic exposure and AMR risk.

6.1.1 Short term

- The Ministry of Health should ensure meaningful participation of diverse groups of women, men, marginalised and vulnerable groups, and representatives from remote and underserved communities in AMR leadership, decision-making positions, advisory groups, and technical working groups;
- Gender and equity experts should be included within the multisectoral AMR coordination mechanisms and AMR policy development processes to support systematic analysis of how sociocultural norms, gender roles, and power relations influence AMU and AMR risks;
- National AMR advocacy and communication materials for AMR stakeholders, community, healthcare professionals, and stewardship teams should explicitly address gendered patterns of AMU and AMR exposure, including women's caregiving roles and the vulnerabilities of key populations such as MSM, sex workers, and people living with HIV.

6.1.2 Medium term

- The Ministry of Health and relevant ministries should mainstream gender and equity across One Health policies and budgeting, ensuring AMR interventions and stewardship extend beyond hospital covering not only hospitals to primary care and community settings;
- Regional governments should be supported to integrate gender- and equity-sensitive AMR priorities into local planning and financing.

6.1.3 Long term

- Periodic policy reviews should assess whether gender and equity mainstreaming within AMR policies has translated into measurable improvements in AMU patterns, AMR outcomes, and equitable access to healthcare services across diverse population groups.

6.2 AMR surveillance, monitoring, and research

Current surveillance systems are predominantly hospital-based and lack sex-disaggregated and intersectional data, obscuring inequities in AMR risk and AMU. This limits the ability to design targeted, evidence-informed interventions.

6.2.1 Short term

- The Ministry of Health and relevant stakeholders should develop and implement gender- and equity-sensitive technical guidelines and AMR/AMU surveillance protocols that routinely collect sex- and age-disaggregated data and, where feasible, additional social variables such as geographic location and access to services, to better capture inequities in antimicrobial exposure and resistance risk -as per GEAR up's 'Intersectional Indicators in surveillance of antimicrobial resistance and use' ;
- AMR research should prioritise gendered and socially differentiated AMR risks among diverse population groups, as well as context-specific solutions.
- Conduct sex and age analysis of existing surveillance data as per GEAR up's 'Guidance on analysing bacteriology laboratory and antimicrobial use data' to ensure equity insights inform national and country decision-making. This will ensure that equity insights meaningfully inform national and country decision-making across human, animal and environmental health systems.

6.2.2 Medium term

- Disaggregated AMR and AMU surveillance data should be regularly analysed and used to inform and tailor AMR and AMU stewardship strategies;
- Antimicrobial stewardship teams should incorporate gender and equity analysis in regular retrospective prescription audits to identify how professional hierarchies and social norms influence prescribing behaviour.
- Strengthen the capacity of surveillance teams and frontline health staff on gender-sensitive data practices, health-seeking behaviour differences, and implicit bias, drawing in resources such as GEAR up's Open University course.

6.2.3 Long term

- Building on the policy review recommendation above, comprehensive retrospective evaluations should be conducted regularly to examine the extent to which gender- and equity-responsive AMR policies and technical guidelines have contributed to reductions in inappropriate AMU, improved treatment outcomes, and lower AMR rates among different population groups.

6.3 Access to infection prevention, diagnosis, and management

Structural and social barriers, such as distance, stigma, and weak infrastructure (including transport, WASH and waste management), shape unequal exposure to infection and AMU, increasing AMR risk.

6.3.1 Short term

- The Ministry of Health and relevant stakeholders should conduct equity-focused assessments within AMR context to gaps in access to WASH, infection prevention services, diagnostics and management, and quality-assured antimicrobials, with attention to specific groups, including women, pregnant women, frontline health cadres, those in remote and underserved areas, MSM, and sex workers;
- Training for healthcare workers should emphasise **non-discriminatory, gender-responsive care**, particularly for sexual and reproductive health and HIV/STIs

6.3.2 Medium term

- Investments in AMR programmes should prioritise **safe WASH and waste management infrastructure** in health facilities and communities to prevent unnecessary antibiotic use;
- The Ministry of Health, regional governments, and healthcare facility managers should update and implement antimicrobial forecasting and procurement standards based on assessments of local, gendered infection epidemiology to ensure the availability of appropriate antimicrobials;
- Community engagement and patient empowerment strategies should strengthen bottom-up participation, enabling women, marginalised groups, and patients to influence decisions related to infection prevention and treatment.

6.3.3 Long term

- Sustainable investments are needed to ensure **equitable diagnostic capacity** in remote and underserved areas, alongside deployment and retention of trained healthcare professionals, ensuring equitable access to targeted and timely infection diagnosis and treatment that reduces empirical and inappropriate antibiotic use.

7. Conclusion

In conclusion, Indonesia has made notable progress in strengthening AMR governance through multisectoral policy frameworks, broad stakeholder engagement, and the adoption of a people-centred approach. However, policy implementation remains largely gender-blind, often overlooking how gendered power relations, social roles, and structural inequalities influence antibiotic use and vulnerability to AMR. Addressing AMR effectively requires more than biomedical and stewardship-focused solutions. It requires an equity-oriented approach that recognises the diverse needs and lived experiences of different population groups. Integrating gender and equity considerations into existing AMR strategies is not only essential for achieving equitable health outcomes but also a matter of social justice. Without such integration, AMR policies risk perpetuating existing inequities by neglecting those most affected by drug-resistant infections.

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Annexes

Annex 1: Gender and Equity (G&E) Assessment Framework for AMR National Action Plans, Strategic Plans, and Policies in AMR Programming

This annex presents the full G&E Assessment Framework that was applied during the landscape analysis to assess how well national AMR policy documents and surveillance strategies integrate G&E considerations. The framework is grounded in global standards, including the WHO's Addressing Inequalities in National Action Plans on Antimicrobial Resistance guidance.

Indicator	Guiding Question
Policy Context and Framework:	*Inclusion of G&E in Vision and Mission:* · Does the national action plan/strategic plan/policy explicitly state G&E as part of its vision and mission? · Are G&E considered as overarching principles guiding the plan?
	Alignment with National and International Gender Policies: · Is the NAP anchored in existing national and international legal frameworks and covenants, such as the constitution, National G&E policies, human rights policies and country specific G&E ratified treaties? · Is there mention of adherence to any gender or equity-specific legal frameworks? · Are there ethical guidelines to ensure that AMR interventions are fair, just, and inclusive?
Objectives and Goals:	*G&E -Specific Objectives:* · Are there specific objectives aimed at addressing gender disparities in AMR? · Are there goals related to improving equity in access to AMR-related healthcare services and interventions?
	Measurable Targets and Indicators: Does the document include measurable targets and indicators that focus on G&E outcomes? Are these targets aligned with broader health and gender equity goals?
Stakeholder Involvement and Participation:	Inclusive Stakeholder Engagement: · Were diverse stakeholders, including women, marginalised communities, and gender experts, involved in the development of the plan or policy? · Does the document outline mechanisms for continued stakeholder involvement in implementation and monitoring?
	Consultation Process: · Were G&E considerations explicitly included in the consultation process? · Is there evidence of meaningful participation from vulnerable groups?
Implementation Strategies:	Gender-Responsive Interventions: · Does the plan include strategies tailored to address gender-specific challenges in AMR? · Are interventions designed to reduce barriers faced by women, men, and marginalised groups? · Were G&E considerations included in the prevention and control interventions? · Are there interventions targeting men, women and other marginalised groups in the infection prevention and control mechanisms? · Are gender gaps and inequalities in the risk of exposure to AMR among healthcare workers and communities identified? · Have gender inequalities in access to quality-assured medicines, including antimicrobials, focusing on specific groups of women or men and marginalised populations who might be at a higher risk of purchasing substandard or falsified antimicrobials, been identified and addressed?
Surveillance, Data Collection:	Gender-Disaggregated Data Collection · Are there provisions for collecting and analysing AMR data disaggregated by gender, age, socioeconomic status, etc.? · Does the document mandate the inclusion of equity dimensions in AMR surveillance systems?
Monitoring and Evaluation (M&E):	Integration of G&E Indicators in M&E: · Does the M&E framework include specific indicators to track progress on G&E ? · Are these G&E indicators linked to the broader health outcomes of AMR programming?
	Reporting and Feedback Mechanisms: · Is there a mechanism for regular reporting on G&E outcomes? · Does the plan ensure that findings from G&E analysis are used to inform policy adjustments and interventions?
Research	Inclusion of Vulnerable Populations in Research: · Are research activities designed to include vulnerable populations to understand how AMR impacts different groups? · Does the plan advocate for research that explores gender-specific and equity-related factors in AMR?

Indicator	Guiding Question
Capacity strengthening and Training:	Gender-Sensitive Capacity strengthening: · Does the plan include training for health workers and stakeholders on G&E in AMR? · Are there efforts to build capacity within marginalised communities to engage with AMR initiatives?
	Continual Professional Development: · Are there provisions for ongoing training and development in gender-responsive AMR strategies?
Communication and Advocacy	Inclusive Communication Strategies: · Does the document outline strategies for inclusive communication that consider different genders, literacy levels, and cultural contexts? · Are advocacy efforts designed to raise awareness about the importance of G&E in AMR programming?
	Use of Media and Outreach: · Are there specific outreach strategies targeting different demographic groups to ensure broad awareness and engagement? · Are health communication strategies in the action plan gender-sensitive and accessible to diverse audiences? · How are gender norms and cultural practices that may affect AMR-related behaviours addressed in the communication strategies?
Legal and Ethical Considerations	Adherence to G&E Legal Frameworks: · Does the plan ensure compliance with national and international legal frameworks on gender equality and non-discrimination? · Are there ethical guidelines to ensure that AMR interventions are fair, just, and inclusive?
	Protection of Vulnerable Populations: · Does the document include measures to protect the rights and well-being of vulnerable groups in AMR interventions?
Sustainability and Impact:	Long-Term G&E Impact: · Does the plan consider the long-term impact of AMR interventions on gender equity and vulnerable populations? · Are there strategies to ensure the sustainability of G&E integration beyond the initial implementation phase?
	Resource Mobilisation for G&E Initiatives · Are there provisions for securing funding and resources to support gender-responsive and equity-focused initiatives within AMR programming?
Equity-Focused Resource Allocation:	· Is there an equitable distribution of resources, ensuring that marginalised groups have access to AMR prevention and control measures? · Does the plan ensure that resources are allocated to areas with the greatest need, particularly those impacting vulnerable populations?

Annex 2: Key Reference Documents Used to Inform the G&E Assessment Framework

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Annex 3: GEAR up 12-domain framework of gender and equity inclusion assessment in policy documents

Areas of Gender and Equity (G&E) Integration
· Policy vision and principles - Whether G&E are explicitly articulated in the vision, mission, or core values of the policy. · Alignment with legal and normative frameworks - Linkages to global frameworks. · National constitutions, gender equality policies, human rights treaties, and ethical standards for inclusive AMR practice. · G&E objectives - Inclusion of G&E-specific goals, measurable targets, and indicators aligned to broader health equity priorities. · Stakeholder inclusion - Participation of marginalised groups, women's organisations, and gender-focused institutions in policy formulation, implementation, and monitoring. · Intersectionality - Recognition of intersecting vulnerabilities (e.g., gender, poverty, disability, rurality) and their implications for AMR risk and response. · Implementation strategies - Existence of equity-responsive and gender-tailored interventions, including in stewardship, prevention, and access to quality antimicrobials. · Surveillance and data practices - Degree of sex-disaggregated and equity-sensitive data collection in AMR/AMU surveillance systems. · Monitoring and evaluation - Integration of gender-sensitive indicators and mechanisms to track equity outcomes and guide adaptive programming. · Research and innovation - support for studies exploring gendered AMR dynamics or the needs of under-represented groups in research design. · Capacity strengthening - Training initiatives for healthcare workers and implementers on G&E within AMR programming. · Communication and advocacy - Inclusive messaging strategies that consider gender norms, cultural contexts, and accessibility across diverse groups. · Financing and sustainability - Provisions for equity-focused budgeting and sustainable gender-responsive investments in AMR.

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