

# PRACTICAL PATHWAYS

to integrating gender and equity considerations in antimicrobial resistance research



## Table of contents

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Introduction	4
Developing this resource	4
Purpose and intended users	6
How to use this resource	7
Part 1: Understanding sex, gender and intersectionality	8
Why are gender and equity considerations important in AMR research?	11
Are gender and equity considerations relevant to all AMR projects?	14
The role of community participation in strengthening gender and equity considerations	16
Part 2: Gender and equity considerations across the AMR research cycle	17
Stage 1: Problem identification	18
Stage 2: Proposal development, project design and setting up M&E	31
Stage 3: Project implementation and data collection	37
Stage 4: Data analysis	43
Stage 5: Reporting and dissemination	49
Concluding remarks	57
Glossary	58
References	59

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## Funder information

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ICARS partners with Low- and Middle-Income Countries (LMICs) governments and research institutions in their efforts to reduce drug-resistant infections by responding to country-identified antimicrobial resistance (AMR) challenges. ICARS provides funding and expertise to support interventions and research projects across the One Health spectrum. ICARS works by co-developing tailored solutions with LMIC governments and researchers, who then implement interventions on the ground. In parallel, ICARS works with researchers, organisations, and AMR partners globally to support nationally developed solutions.

IDRC supports the generation of knowledge – including by individuals of diverse genders, communities, histories, and experiences – that tackles systems perpetuating inequalities. IDRC-supported research into neglected livestock diseases and AMR animal production in the Global South addresses important One Health research gaps. IDRC recognises that skills and expertise in research and innovation within LMICs are essential for solutions to be sustainable. The centre works directly with researchers in developing regions to respond to critical global priorities.

## Introduction

### Developing this resource

We developed this resource using a participatory process that promotes the co-creation of knowledge by researchers and other role players with insights into and lived experience of a particular issue.

As a first step, the research team conducted a systematic review of journal articles published between 2017 and 2022. The aim was to synthesise current evidence on integrating gender and equity considerations in antimicrobial resistance (AMR) research. We focused on LMICs, covering human and animal health. Next, we conducted online expert consultation workshops, individual interviews, and a co-creation workshop with researchers in AMR-related fields and gender experts.

The research engagements aimed to (a) gain a deeper understanding of the various contexts and structures that make some groups and individuals more vulnerable to AMR; (b) strengthen the capacities of AMR researchers in applying a gender and equity lens to their work; and to c) generate insights for developing this resource. These ensure that the emerging guidance document is a valuable and practical tool for advancing a gender and equity lens in AMR research.



17

#### Expert consultations

Kenya; Ghana; Tanzania;  
Zambia; Zimbabwe Hong Kong;  
Indonesia; Lao PDR; Malaysia;  
Thailand; Vietnam

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#### Individual interviews

Kenya; Tanzania;  
Indonesia/Belgium; Vietnam

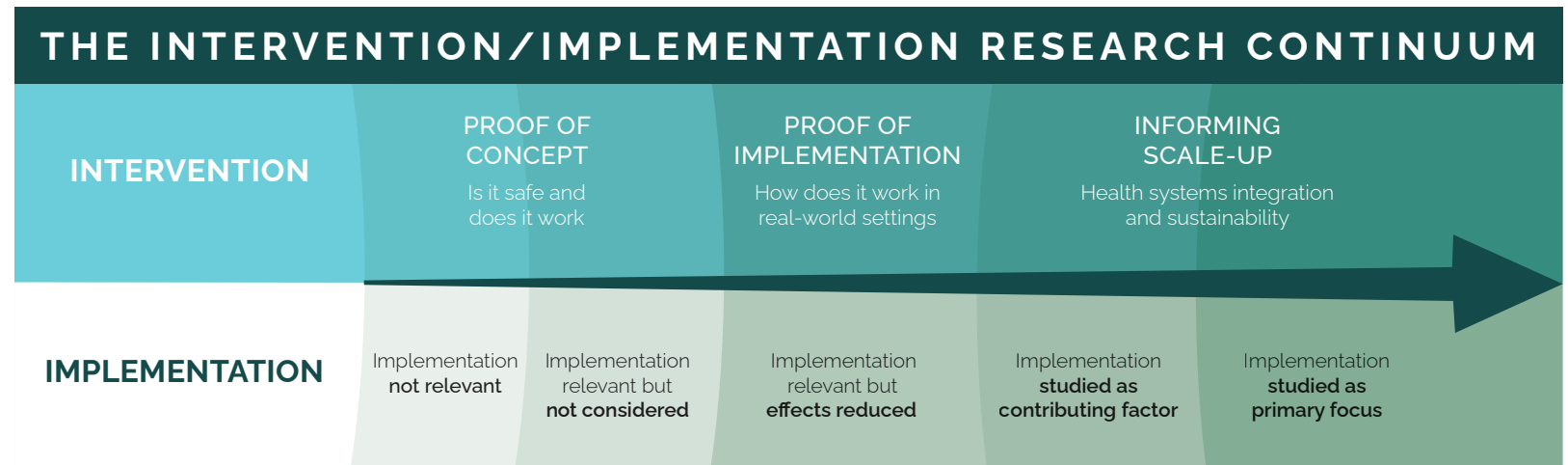
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#### Co-creation workshops

Ghana; South Africa; Tanzania;  
Thailand; Vietnam; Australia; UK

The consultations enabled AMR researchers to share their experiences incorporating gender and equity considerations into their research, including their successes and challenges. Participants without experience applying a gender and equity lens shared what information they might require in a resource document. They also

reflected on the value such a lens may have added to their prior work. These research engagements provided valuable insights into the knowledge, resources, and tools that AMR researchers may need or find helpful in their quest to conduct AMR research through a gender and equity lens.



Intervention/implementation research aims to improve the uptake of evidence-based clinical innovations in everyday practice. Rather than stopping at the 'proof of concept' stage, implementation research explores how an intervention works in real-world settings and how to scale it up effectively. This entails considering the obstacles to and facilitators of uptake. Specific research projects may exist at any point along this continuum, and each will have different gender and equity considerations that, if addressed, will lead to enhanced impact in real-world settings. *Credit: World Health Organisation*

## Purpose and intended users

AMR has become a major global concern, threatening human and animal health, food security, and food safety. Yet, the burden of AMR is not distributed equally, with the harmful impacts disproportionately felt by people living in LMICs where social, structural and systemic challenges are contributing to the growing burden of AMR <sup>1</sup>. Moreover, gender inequality and various forms of marginalisation mean that women and vulnerable groups are particularly affected. Addressing gender and equity issues in AMR requires asking <sup>2</sup>:

- Is the impact of AMR the same for everyone?
- Are certain groups in society facing greater risks of AMR exposure?
- Do some groups find it harder to get the right information, resources, and solutions to deal with this problem?
- If some groups are more vulnerable to AMR, why is this the case, and what can be done about it?

This document is a flexible resource to help researchers answer these questions and incorporate gender and equity considerations into their studies. The primary focus of the document is on gender dimensions and not sex (see Part 1: understanding sex, gender and intersectionality for more detail). The intended users are researchers conducting AMR innovation development and intervention implementation research in LMICs.

“ *The aim is to offer practical ideas and directions for exploring gender themes in research, applying a gender and equity lens to study design and methods, and promoting inclusivity in research teams and practices.* ”

The document is also relevant to development practitioners working on AMR-related projects. While the resource adopts a One Health approach, the focus is primarily on AMR in relation to human and animal health. The aim is to offer practical ideas and directions for exploring gender themes in research, applying a gender and equity lens to study design and methods, and promoting inclusivity in research teams and practices. It is designed to be as accessible as possible, regardless of pre-existing knowledge or experience in applying gender approaches, and is intended for researchers from a range of research and academic backgrounds.

## How to use this resource

This resource is presented in two parts.

**Part 1** provides an overview of sex, gender, and intersectionality as key concepts used throughout the document. It also explores the different ways in which gender and equity considerations are relevant to AMR research.

**Part 2** is structured around a simplified research cycle to provide conceptually distinct entry points for integrating gender and equity considerations across all study components. Monitoring and evaluation (M&E) occur throughout the cycle and related suggestions are therefore presented throughout Part 2. Of course, not all studies follow this simple, sequential cycle. For instance, in AMR implementation research, this might span inter-related phases (or cycles) of proof of concept, proof of implementation, and scale-up<sup>3</sup>.

1. Defining the research problem
2. Proposal development
3. Implementation and data collection
4. Data analysis
5. Reporting and dissemination

While it is possible to read selected sections of this document guided by interest in a specific stage, we suggest that you first familiarise yourself with the information in Part One. This will ensure that you have a foundation on which to build when exploring other sections.



## What is covered in Part 1

Understanding sex, gender  
and intersectionality

Why are gender and equity  
considerations  
important in AMR research?

Are gender and equity  
considerations  
relevant to all AMR studies?

The role of community  
participation in  
strengthening gender and  
equity considerations

## Understanding sex, gender and intersectionality



Veterinary Assistants vaccinate small-holder farmers' livestock. *Photo credit: IDRC/Bartay*



**Sex** refers to the biological aspects – such as hormonal, chromosomal and anatomical characteristics – that are associated with male, female and intersex bodies.

**Gender** refers to the socially constructed roles, behaviours, activities, characteristics and opportunities that a given society considers appropriate for men and women, boys and girls, and other gender identities.

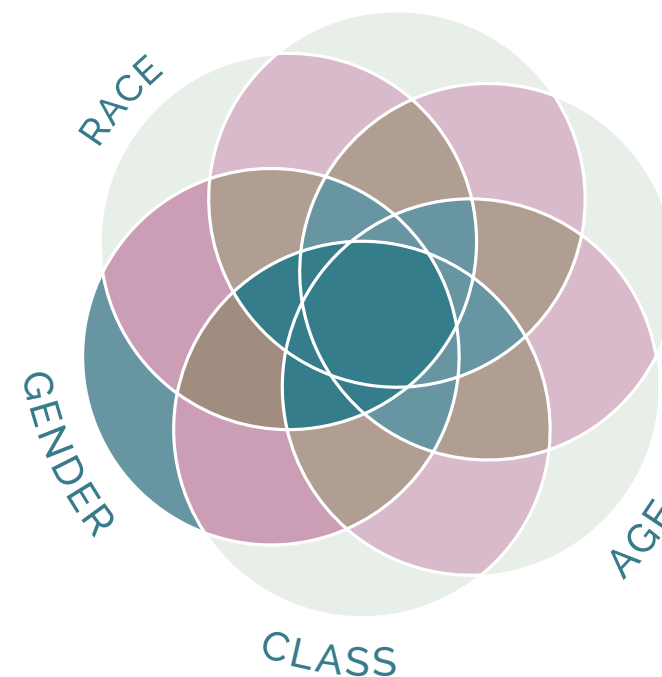
Because sex is typically used in a binary way, i.e., limited to 'male' and 'female', it has become common to use **gender identity** to differentiate between how people describe their sense of their identity. This better captures the diversity of people's identities, e.g., male, female, transgender and non-binary identities.

## Understanding sex, gender and intersectionality

Gender inequalities shape access to information, healthcare, financial resources and paid employment, which may impact AMR risk and vulnerability<sup>4</sup>. These inequalities occur when someone experiences different and unfair treatment based on their gender identity. Gender inequalities persist because social, economic, and political institutions reinforce unfair expectations, rights, and opportunities for different gender identities. This unfair treatment can happen intentionally or may be unintended.

Different groups of women, men and persons of other gender identities may experience differing levels of disadvantage (or advantage) based on overlapping social and biological factors like wealth, education, occupation, race, ethnicity, disability and age. In most societies, women and persons of other gender identities are disadvantaged, as men generally have more power and access to opportunities<sup>5</sup>.

Intersectionality is a metaphor for understanding these overlapping social stratifiers<sup>6</sup>. Some people live at the intersection or crossroads of multiple systems of oppression. For example, they might experience discrimination because of their race and also because of their gender. These different forms of discrimination

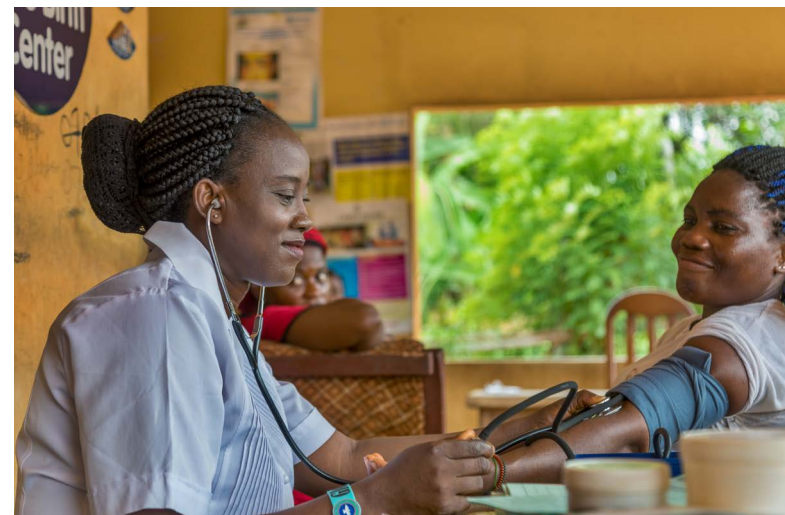


do not exist separately; they happen together and influence each other. Instead of adding up the effects of each form of discrimination individually, the concept of intersectionality also asks us to consider how they interact. This understanding is essential because different factors

can work together to increase a person's marginalisation. In research, the concept helps us avoid a 'one-size-fits-all' approach to AMR solutions that groups together people with widely diverging needs, experiences and vulnerabilities<sup>7</sup>.

“ *In research, the concept of intersectionality helps us avoid a 'one-size-fits-all' approach to AMR solutions that groups together people with widely diverging needs, experiences and vulnerabilities.* ”

Adopting an intersectional lens can feel overwhelming to researchers. This resource intentionally focuses on gender while recognising that this is impossible to view in isolation, given the complexity of our societies. Therefore, a gender and equity lens is an entry point for AMR researchers across different types of research studies. Using an equity lens means considering the socially stratifying forces that drive health inequities, such as place of residence, race, ethnicity, culture, language, sex, gender, religion, occupation, education, socio-economic status and social support networks. An equity lens helps ensure that your AMR research considers the needs of the population's most disadvantaged segments and avoids intervention-



A women's health intervention in Ewatto, Edo state Nigeria.  
Photo credit: IDRC

generated inequalities. For instance, an AMR education intervention on preventing infections in pregnancy that only reaches urban-based pregnant women with the financial means to travel to the community clinic unintentionally widens health inequities by excluding rural, poorer pregnant women<sup>8</sup>.

Other resources are available for those wishing to conduct a more comprehensive intersectional analysis. For example, the WHO-TDR (2022) *Incorporating intersectional gender analysis into research on infectious diseases of poverty* toolkit is an excellent resource for in-depth practical guidance on applying an intersectional approach.

## Why are gender and equity considerations important in AMR research?

By applying a gender and equity lens, researchers can paint a more accurate and complete picture of AMR. Disaggregating data by sex has led to important insights about differences in vulnerability to illness and AMR risk<sup>9</sup>. For example, the female anatomy increases susceptibility to urinary tract infections (UTIs), resulting in women having a higher lifetime antibiotic use than men, on average. This, in turn, leads to greater risk of AMR<sup>10</sup>. However, female biology only partly accounts for women's comparatively higher AMR risk. Applying a gender and equity lens has helped researchers to develop a more comprehensive understanding of this risk. For instance, women are up to three times more likely to receive an antibiotic prescription than men, pointing to gender bias in providers' prescribing practices<sup>11</sup>. A gender and equity lens also helps reveal why some women may delay treatment for UTIs or choose to self-medicate with unprescribed antibiotics. In some sociocultural settings, UTIs are associated with infidelity, resulting in women with recurring infections being stigmatised<sup>12</sup>.

### WHY ARE GENDER AND EQUITY CONSIDERATIONS IMPORTANT IN AMR RESEARCH?



#### HOUSEHOLD AND COMMUNITY SETTINGS

Gender inequalities reduce women's power in household financial and healthcare decisions, limiting their treatment choices and fostering practices like antibiotic sharing.

**Effective community-level AMR interventions must address interlinkages between gender dynamics and other inequalities.**



#### HEALTHCARE SETTINGS

Women are over-represented in frontline healthcare, facing heightened drug-resistant organism exposure. Limited access to safe water, sanitation, and hygiene facilities escalates risks.

**Recognising these overlapping gendered vulnerabilities informs appropriately targeted AMR interventions**



#### AGRICULTURE SETTINGS

Women in agriculture are predominantly smallholder farmers and struggle to afford livestock vaccines. This leads to livestock infections, harming women's livelihoods and increasing antimicrobial reliance.

**A gender-focused approach in research helps curb the deepening of existing inequalities.**



*A gender and equity lens reveals why some women may delay treatment for UTIs or choose to self-medicate with unprescribed antibiotics.*



Other examples of the linkages between AMR, gender and equity include:

- Women make up the majority of frontline healthcare workers, increasing their occupational exposure to drug-resistant organisms (DRO) in healthcare facilities. Women are also exposed to DRO when caring for sick children and when managing infants' waste unsafely. In a study conducted in rural Bangladesh, researchers found that mothers of children under 5 had high levels of *E. coli* exposure through children's faecal matter<sup>13</sup>. These exposure risks are higher when access to safe water, sanitation and hygiene (WASH) is limited. **A better understanding of gender roles and their influence on AMR risk can guide interventions that target those most vulnerable to AMR exposure.**
- Women generally have less say in how household income is used, and, in some sociocultural contexts, they may require permission from their husbands to visit a healthcare facility or purchase medication. **This limits their treatment options and contributes to practices such as sharing antibiotics or storing the remainder of an antibiotic course for later once symptoms ease**<sup>4</sup>. These risks are especially pronounced for poor women and women living in rural areas. A Tanzanian study found that close to half (47%) of mothers reported giving their ill children unprescribed antibiotics purchased from informal pharmacies in their community because they did not have money to travel to healthcare facilities<sup>14</sup>.
- Gender norms can also put men at risk. A study conducted in Nepal found that norms that associate masculinity with toughness and self-reliance contributed to men pressuring health staff to prescribe antibiotics even if not clinically indicated, since 'strong' antibiotics were associated with recovering more quickly<sup>4</sup>. **Interventions to curb AMR are more effective if they consider how gender dynamics influence the ability of women, men and other gender identities to act on information about appropriate antibiotic use. This includes considering how gender interacts with factors such as poverty and rural location.**
- Women farmers have a low uptake of livestock vaccines. In a study conducted in Uganda, women explained that they cannot afford them, since the vaccines are produced in large-dose vials with commercial farmers as the primary end users in mind. Often women, mainly smallholder farmers, rear fewer animals<sup>15</sup>. This financial barrier to vaccine access means that animals are more likely to experience infections, increasing women's reliance on antimicrobials and damaging their livelihoods. **Applying a gender and equity lens in innovation and implementation research helps researchers to identify and address such access barriers and reduces the risk that interventions unintentionally deepen existing inequalities.**

- Women subsistence farmers are often closely involved in the daily activities of livestock keeping, including observing animals for signs of disease and treating sick individuals. Yet, in many instances, women are excluded when resources about AMR and animal health are shared. Instead, men are targeted as heads of households<sup>16</sup>. Cultural norms that require women to have their husbands' permission to travel to information or training events also hamper the impact of AMR mitigation<sup>15,17</sup>. **Without a gender and equity lens, the strategic value of including women as critical stakeholders in awareness, training and other knowledge-sharing activities may be overlooked.** Information and resources do not necessarily reach the correct people.

“ *Applying a gender and equity lens reduces the risk of interventions unintentionally deepening existing inequalities.* ”

Integrating gender and equity considerations in AMR innovation and implementation research **enhances research quality**, reduces the risk that interventions **deepen existing inequalities**, and supports policy and decision-making that is more **targeted and cost-effective**.



Small-scale farmer Jane Kilonzo feeds her indigenous chickens.  
Photo credit: IDRC/Bartay

## Are gender and equity considerations relevant to all AMR studies?



*All studies, regardless of the extent to which they focus on gender and equity, require attention to diversity and inclusion in team composition and the research environment.*



Gender and equity considerations are not relevant to all studies to the same extent:

- **Gender-specific research** explicitly focuses on gender as a topic of exploration in the study<sup>18</sup>. Such research aims to understand the relationship between gender and AMR better. For instance, studies that explore how gender norms, roles, or power relations influence AMR risk are gender specific.
- **Gender-relevant research** does not include gender as a primary topic of investigation. However, gender and equity considerations potentially shape the study at different points in the research cycle<sup>18</sup>. For example, even if a study is not focused on gender themes, gender power dynamics during data collection might prevent women from sharing their opinions openly.
- In studies focused on **developing theories, technologies or innovation products** and where no human participants are involved, gender may not be relevant to the research content or design<sup>18</sup>. However, gender and equity considerations might still apply to

how research findings or products benefit different groups of people. For example, women in LMICs are, on average, less likely to own a mobile phone or have access to the internet than men<sup>19</sup>. This digital divide can limit the extent to which women can make use of AMR solutions reliant on technology.

- For gender-specific and gender-relevant research, integrating gender and equity considerations throughout the research cycle will improve research quality and end-user acceptance and adoption of innovations arising from product development research. All studies, regardless of the extent to which they focus on gender and equity, require attention to diversity and inclusion in team composition and the research environment.

Table 1: Assessing the  
relevance of gender and  
equity to your study

A gender-specific study	A gender-relevant study	A study focused on developing theories, technologies or innovation products (no human participants, not field-based)
✓ <b>Research content:</b> Gender equity themes are the main topic of study.	✗	✗
✓ <b>Research design and methods:</b> Gender and equity are relevant to design and implementation.	✓ <b>Research design and methods:</b> Gender and equity are relevant to design and implementation.	✗
✓ <b>Research benefit:</b> Gender and equity influence who benefits from study outputs or outcomes (e.g., innovation products, policy recommendations).	✓ <b>Research benefit:</b> Gender and equity influence who benefits from study outputs or outcomes (e.g., innovation products, policy recommendations).	✓ <b>Research benefit:</b> Gender and equity influence who benefits from study outputs or outcomes (e.g., innovation products, policy recommendations).
✓ <b>Research teams:</b> Gender diversity and equitable participation are considered in research teams.	✓ <b>Research teams:</b> Gender diversity and equitable participation are considered in research teams.	✓ <b>Research teams:</b> Gender diversity and equitable participation are considered in research teams.

## The role of community participation in strengthening gender and equity considerations

Equitable and respectful partnerships with community stakeholders, including end users of AMR solutions, can strengthen a study's responsiveness to the social context of antimicrobial use. This can enhance the local relevance and sustainability of AMR solutions and help ensure that everyone benefits equally from research findings and products <sup>20</sup>.

Methods for community participation can vary. For example, a simpler approach is consulting various community-based groups, constituencies, or stakeholders at selected time points, while a more intensive approach could be constituting a community advisory board and conducting participatory research (e.g., community-based participatory action research) <sup>21,22</sup>. Your approach will depend on what is feasible and appropriate for your study objectives. We highlight opportunities for engaging communities at different points in the research cycle throughout the document.



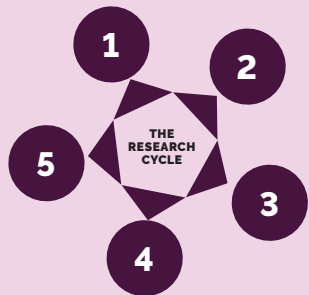
Young people participating in a consultation in Kathmandu, Nepal  
Photo credit: Tribesh Kayastha, Unsplash

“ Partnering with community stakeholders can enhance the local relevance and sustainability of AMR solutions. ”



## What is covered in Part 2

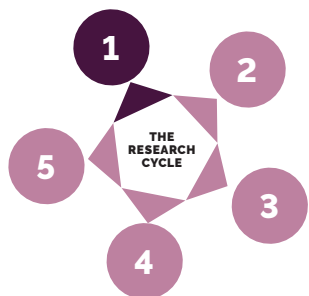
- Stage 1**  
Problem identification
- Stage 2**  
Proposal development
- Stage 3**  
Project implementation and  
data collection
- Stage 4**  
Data analysis
- Stage 5**  
Reporting and dissemination



## Gender and equity considerations across the AMR research cycle



Gender and equity considerations can strengthen the entire research process. *Photo credit: IDRC*



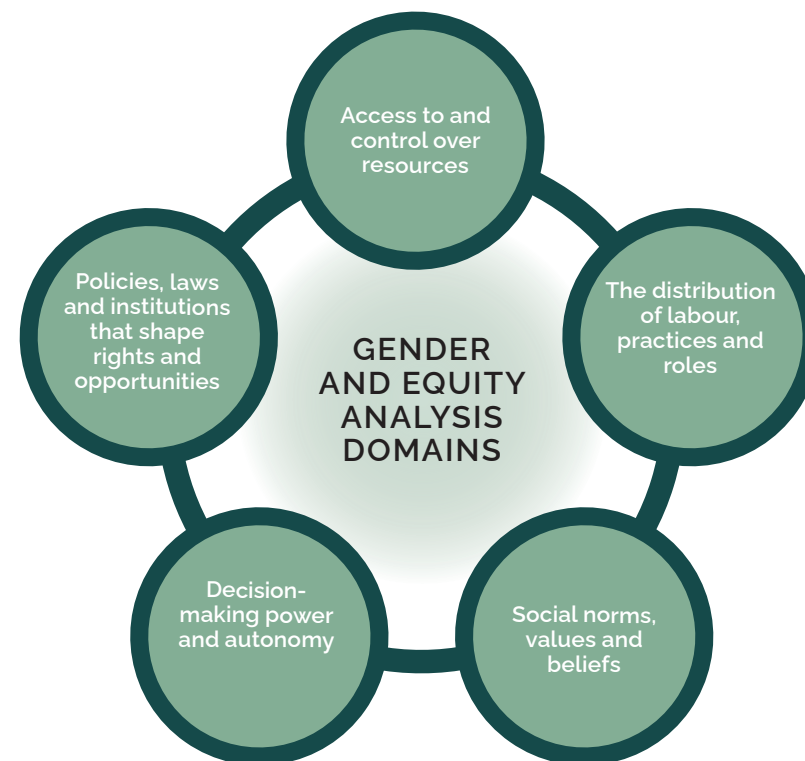
## Stage 1: Problem identification

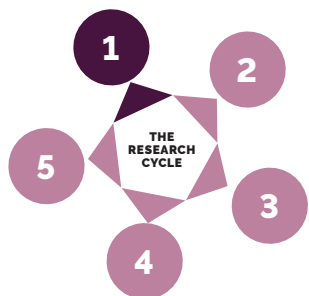
### What is a gender and equity analysis?

Conducting a gender and equity analysis is the first step in moving a study from excluding questions of gender and equity to meaningfully integrating such considerations. A gender and equity analysis helps break down how gender roles, expectations and power dynamics lead to different or inequitable experiences and outcomes. Such an analysis helps research teams to understand better how gender and equity concerns are relevant to a research topic and how these can be proactively addressed throughout a study.

All AMR studies, regardless of whether they directly engage gender and equity topics, can benefit from conducting a gender and equity analysis. For example, in product development studies that do not include human participants or field testing, such an analysis can result in a more equitable distribution of the benefits of AMR solutions among end users (see Case Study 2, Table 4, pg. 26).

Different frameworks and tools are available to help researchers conduct robust gender and equity analyses and use the findings to refine their research problem. In this resource, we focus on a *gender and equity analysis* matrix, adapted from widely used gender frameworks <sup>5,9,23</sup>.





This matrix focuses on five key areas, or domains, that show how gender power imbalances can lead to inequalities in societies <sup>24</sup>. These gender analysis domains are common across most sociocultural settings:

- Access to and control over resources: exploring “who has what?”
- The distribution of labour, practices and roles: exploring “who does what?”
- Social norms, values and beliefs: exploring “how are values determined and what are their impacts?”
- Decision-making power and autonomy: exploring “who decides?”
- Policies, laws and institutions that shape rights and opportunities: exploring “what formal structures influence one’s rights and opportunities?”

The gender and equity matrix – essentially a table – offers a practical way to apply these gender analysis domains to your study. The matrix is a tool to help you systematically assess and organise how gender and equity considerations interact with your research topic. It has three main components:

- 1 **Topic domains** based on the areas of interest in your particular study. Commonly used topic domains in infectious diseases, such as vulnerability to disease and exposure risk, are included in the matrix template below <sup>23,25</sup>. However, your topic domains will depend on your study’s focus.
- 2 Established **gender analysis domains**, i.e., access to resources; distribution of labour, practices and roles; norms, beliefs and values; decision-making power and autonomy; and policies, laws and institutions <sup>23</sup>.
- 3 Relevant **biological and social factors, or stratifiers**, that intersect with gender, such as sex, age, race, residential status or income <sup>9,23</sup>. The specific intersecting stratifiers included in your matrix will depend on your study focus and setting.

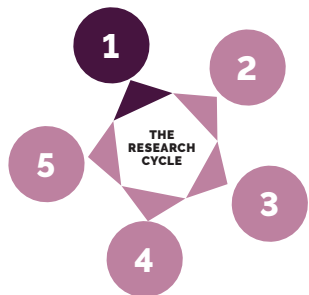
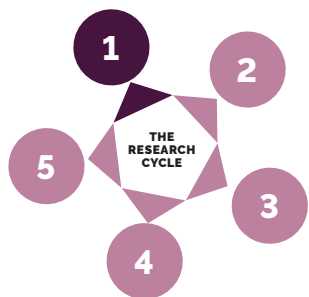


Table 2: Example of a gender and equity matrix template (adapted from Morgan et al., 2022)

	TOPIC SPECIFIC DOMAINS		
	Vulnerability to disease / illness	Ability to prevent exposure	Response to illness / treatment
BIOLOGICAL & SOCIAL STRATIFIERS			
Sex			
Education Level			
Area of residence			
GENDER ANALYSIS DOMAINS			
Access to resources			
Distribution of labour, practices, roles			
Norms, values, beliefs			
Decision-making power, autonomy			
Policies, laws, institution			



Note that a range of gender analysis frameworks and tools exist, so you might wish to explore a few before deciding on one that best serves your study. You may even consider combining elements from different frameworks (see the resources listed at the end of this section). In what follows, we first provide information on how to complete a gender and equity matrix, before sharing two case studies and practical ideas for using the findings of a gender and equity analysis to refine your study conceptualisation.

### What data sources can be used to complete a gender and equity matrix?

You can populate the matrix based on a desk review of data sources relevant to your study location. The desk review can include published research studies (for example, journal articles), national survey data, and relevant policies in the study setting <sup>26</sup>.

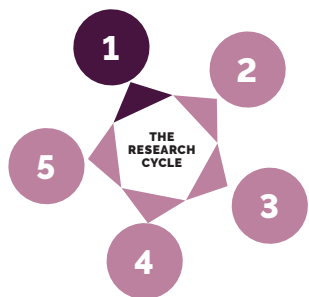
Parts of the matrix might be difficult to populate due to a lack of sex-disaggregated data or published gender-focused research on a particular topic domain. This can be a finding in itself and direct your attention to groups that are particularly marginalised <sup>23</sup>. For instance, little research has been conducted on sex workers' vulnerability to AMR concerning prophylactic antibiotic use <sup>27</sup>. This underscores a gap in available research evidence on the link between the social stratifier 'occupation' and the topic domain 'vulnerability to AMR'.

“ A lack of data can be a finding in itself and direct your attention to groups that are particularly marginalised. ”

If necessary, you can address these gaps by supplementing your desktop review with interviews with known local gender or social science researchers familiar with the study context, and with input from study staff, community members, and other stakeholders with relevant experiential knowledge <sup>26</sup>. You can also supplement the review with findings from studies conducted in other countries if there are sufficient similarities, noting where this is the case. Ideally, however, a gender and equity matrix would focus on evidence from the local study setting.

You can find helpful guiding questions related to human health (although not specific to AMR) in Morgan et al. (2022), the WHO (2011) and WHO-TDR (2020) toolkits. These can be adapted to your study to assist in populating the matrix.

Finally, a potential challenge when completing the matrix is that information might be relevant to multiple domains, in which case you might decide to capture the same data in more than one cell. While conducting a gender and



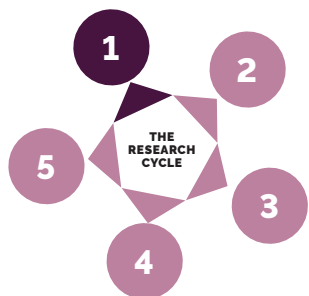
A scene from a fish market in Seririt, Indonesia. *Photo credit: Nicolas McComber*

equity analysis helps refine your research problem, it is not a once-off activity. Instead, as subsequent sections of this document will show, you will revisit the findings throughout your study to guide gender and equity considerations at different research stages.

Tables 3 and 4 provide examples of completed gender and equity matrices based on two case studies (see p. 24 and p. 26). In both examples, the matrix is populated using a desk review of existing local research, survey data, and national policies. The topic domains are based on the research focus of the case studies. The social stratifiers are based on a literature review.

For example, Table 3 is based on Case Study 1, which is concerned with community-acquired urinary tract infections (UTIs) and antibiotic use among women in Tanzania. A literature review highlighted education level and area of residence as shaping how women seek healthcare in the study setting<sup>28,29</sup>. Consequently, these two social stratifiers are included in the matrix.

Table 4 is based on Case Study 2, which explores the development and implementation of an aquaculture vaccine in Indonesia. A literature review showed that socio-economic status, area of residence, and traditional religious norms are important factors impacting women's roles in small-scale aquaculture<sup>30-33</sup>. These social stratifiers were therefore included in the matrix.



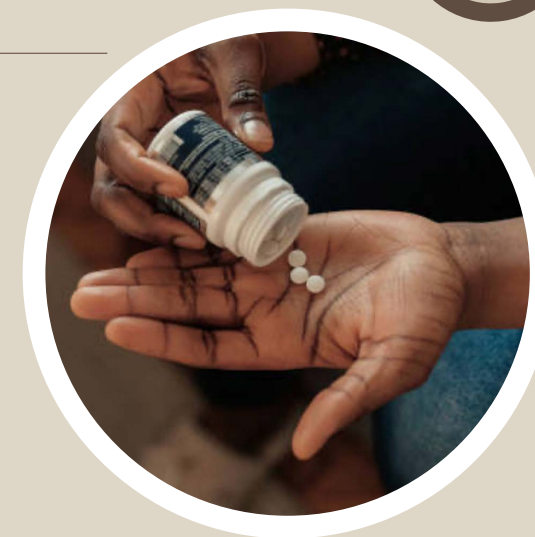
## CASE STUDY 1:

Community-acquired UTIs and antibiotic  
use among women in Tanzania

In Tanzania, drug-resistant UTIs occur due to a complex interplay between strained health systems, provider prescription practices and individual treatment-seeking behaviours<sup>34</sup>. In this setting, community-acquired UTIs are more common than hospital-acquired infections<sup>35</sup>. Drug-resistant UTIs are partly driven by delayed treatment-seeking and self-medication with non-prescription antibiotics and herbal or traditional medicines<sup>36</sup>.

Little research explores the social and structural contexts influencing women's UTI treatment decisions. These factors are potentially important drivers of antibiotic misuse in LMICs. Without research that delves into the contextual patterns and determinants of women's antibiotic use, AMR education programmes may be less effective<sup>34</sup>.

This study aims to gain a better understanding of women's treatment-seeking behaviours and antibiotic use for community-acquired UTIs in Tanzania. Such insights can aid in developing customised, locally relevant AMR stewardship programmes.



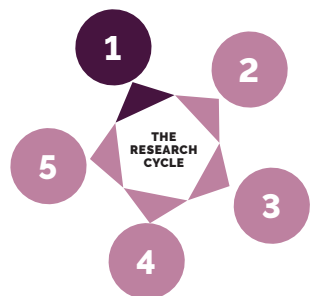
A woman preparing to take antibiotics. Photo credit: PixelsEffect

Throughout this document, we draw on this case study to illustrate how AMR intervention implementation research, such as a community-based antibiotic stewardship programme, can incorporate gender and equity considerations to better align with the realities of women's antibiotic use and bridge the gap between interventions and the local context.

Table 3: Case Study 1 -  
Community-acquired  
UTIs and antibiotic  
use among women in  
Tanzania

				TOPIC SPECIFIC DOMAINS		
				Vulnerability to disease / illness	Ability to prevent exposure	Response to illness / treatment
<b>BIOLOGICAL &amp; SOCIAL STRATIFIERS</b>						
Sex	Female anatomy and hormonal changes during pregnancy increase susceptibility to UTIs <sup>10</sup> .					
Education Level				Education and literacy rates are lower for women than men, with potential implications for AMR awareness campaigns <sup>43</sup> .		
Area of residence	Less than half the population of women in rural areas have access to basic sanitation <sup>43</sup> . This makes it harder to maintain proper menstrual and other hygiene practices, increasing UTI risk.					Rural households are more likely to live far from healthcare facilities and are more likely to have to borrow money or displace household consumption to meet healthcare needs <sup>45,46</sup>
<b>GENDER ANALYSIS DOMAINS</b>						
Access to resources						Men's control of household finances limits women's ability to travel to health facilities, pay user fees and purchase medication <sup>12</sup> . This contributes to delayed treatment seeking, non-adherence, and sharing medications.
Distribution of labour, practices, roles						Women spend three times more time on unpaid care work than men, often in addition to paid employment, leaving limited time for treatment-seeking <sup>47</sup> .
Norms, values, beliefs	Female genital mutilation persists in some regions and increases UTI risk <sup>44</sup> . Intimate partner violence is high and is rooted in social norms that justify such violence. OECD (2023).			Studies conducted in high-income countries indicate prescriber bias where women are more likely to be prescribed antibiotics than men; national data is unavailable <sup>11</sup> .		UTIs can be stigmatising, causing women to delay treatment or opt for unprescribed antibiotics <sup>12</sup> .
Decision-making power						Men are considered households' primary decision-makers, including women's and children's healthcare <sup>47</sup> . Women might also need permission to seek treatment from extended family and, in polygamous households, from older / first wives <sup>12</sup> .
Policies, laws, institution				The AMR National Action Plan (NAP) (2023-2028) acknowledges the impact of gender on AMR risk, but this is yet to be filtered through to public health policy.		





## CASE STUDY 2:

Development and future implementation  
of an aquaculture vaccine in Indonesia

Aquaculture in Indonesia supports the livelihoods and food security of over 1.5 million households. Small-scale intensive pond farming is the most widespread cultural method and contributes significantly to the economy<sup>37,38</sup>. Women constitute between 42-80% of the workforce in aquaculture, mainly in small to large-scale household operations<sup>39</sup>.

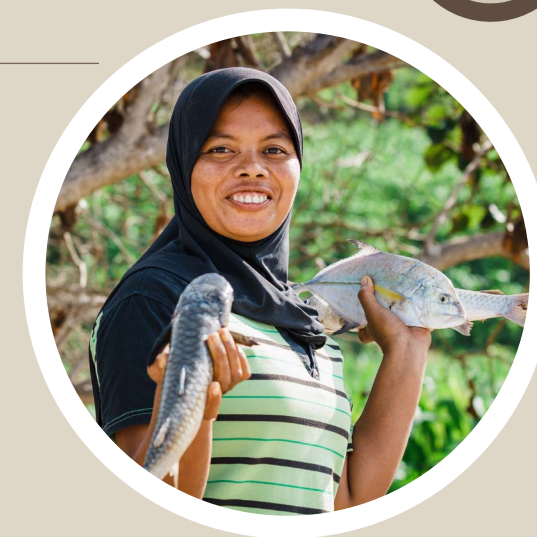
Farming methods have intensified to meet the growing demand for food security. However, fish raised in intensive farming systems have a high risk of dying before they are harvested (50%), generally due to bacterial or viral diseases<sup>40,41</sup>.

Although two vaccines are commercially available, many farmers are reluctant to use them. This is due to the high cost of vaccines, mistrust in vaccine effectiveness, complex supply chains, and the wide availability of cheap drugs such as antibiotics<sup>30,42</sup>.

This study sets out to develop a vaccine that targets more than one bacterium affecting fish that are economically important to small-scale aquacultural farmers. For improved uptake, this innovation must be

cost-effective, easy to administer, and accessible to rural and indigenous communities and women farmers who are vital to the productive sector but overlooked because their contributions are seen as domestic work.

This case study is used at different points in this document to illustrate how a gender and equity lens can benefit AMR innovation research and improve subsequent adoption of the innovation.

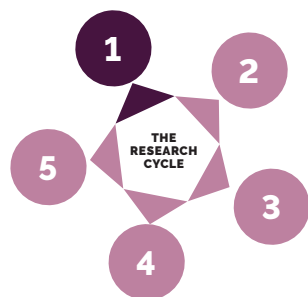


A local resident in a fishing community in West Sumbawa, Indonesia.  
*Photo credit: Nature*



Table 4: Case Study 2 - Development and future implementation of an aquaculture vaccine in Indonesia for AMR mitigation

				TOPIC SPECIFIC DOMAINS		
				Understanding the aquaculture context	Identifying challenges for vaccine adoption	Identifying enablers for vaccine adoption
<b>BIOLOGICAL &amp; SOCIAL STRATIFIERS</b>						
Location	Most small-scale aquaculture operations are in coastal and indigenous communities and rural areas <sup>37,48</sup> .					Partnering with community-based organisations in remote areas can help decentralise AMR education and vaccine programmes for marginalised groups <sup>51,52</sup> .
Religion		The country has a majority Muslim population. In some aquaculture communities, Islamic principles prescribe domestic and family roles for women and often a male escort for movement outside the home <sup>50</sup> .				Establishing AMR dissemination partnerships with existing women's groups knowledgeable about gendered contexts improves access to AMR and vaccine information for traditional women <sup>33</sup> .
Wealth	Although aquaculture households can be categorised into three wealth groups (poor, medium and high), women across groups consider reproduction their primary role <sup>33</sup> .	Poorer and subsistence farmers, as well as rurally or remotely located farmers, have difficulty reaching veterinary and extension services, which are usually based in larger communities <sup>51,52</sup> .				
<b>GENDER ANALYSIS DOMAINS</b>						
Access to resources	Women have unequal rights to assets, including inheritance. Consequently, women have less access than men to productive aquaculture resources such as land, capital, ponds and tanks, and technologies <sup>33</sup> .	Minority groups and women may be excluded or lack the voice to contribute to community discussions about sustainable solutions to AMR <sup>51,52</sup> .				Partnering with community-based organisations in remote areas can help decentralise AMR education and vaccine programmes for marginalised groups <sup>51,52</sup> .
Distribution of labour, practices, roles	Women constitute between 42-80% of the workforce in aquaculture, mainly in small to large-scale household operations <sup>39</sup> .	Although women are involved in production activities, their knowledge about and involvement in aquaculture treatment decisions, including the use of antibiotics and vaccines, is limited <sup>33</sup> .				
Norms, values, beliefs	Women's contributions to aquaculture are often undervalued and seen as domestic work <sup>49,50</sup> .	Men occupy public-facing roles while women concentrate on processing due to the belief that they are compliant, flexible, meticulous, and willing to work for lower wages than men <sup>39</sup> .				Women managing or owning aquaculture operations report better practices related to antibiotic use than men <sup>32</sup> .
Decision-making power	Men as "heads of household" are most of the lead operators in aquaculture, although they may seek their wives' opinions <sup>33,50</sup> .	Lack of decision-making power is a key constraint for the participation of women in aquaculture <sup>53</sup> .				In Myanmar, women's participation in decision-making is associated with improved technical efficiency of household aquaculture operations, including uptake of vaccines <sup>53-55</sup> .
Policies, laws, institution	Lack of sex-disaggregated data in all value chain activities – preproduction, production, post-harvest (processing, marketing), and subsistence <sup>39</sup> .	The Indonesian National Action Plan addresses AMR in the aquaculture sector but without a gender lens <sup>33,39</sup> .				A comprehensive analysis of how local gender norms and power relations influence different actors in the aquaculture value chain is needed. Such an analysis is an enabling factor for the adoption of sustainable AMR solutions <sup>38</sup> .

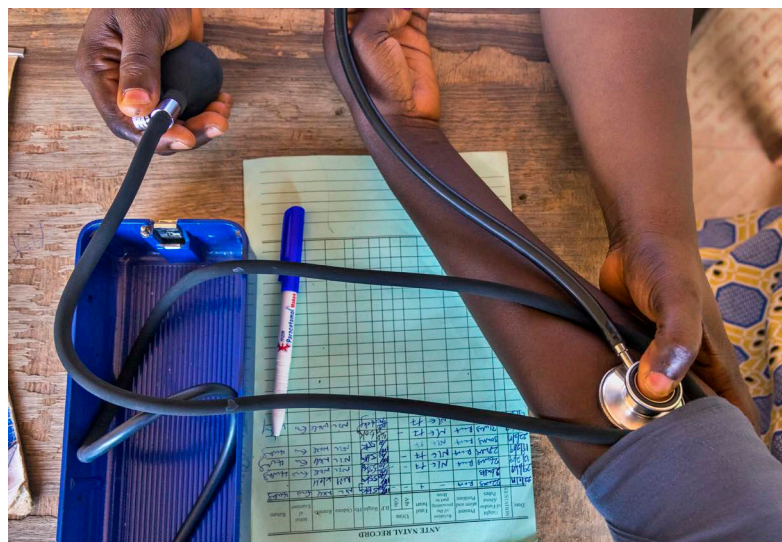


## Applying the findings from your gender and equity analysis to your study

Once you have completed your gender and equity matrix, you can use the findings to refine your research problem. Case Study 1 and 2 (on the next page) show how you can use the information to:

Identify key areas of inquiry related to the gender relations domains:

Looking at your completed matrix, which gender relations domains are particularly relevant to your study? Once you have identified these, you can integrate the domains into your study design by, for example, including the domains as



A women's health intervention in Ewatto, Edo state Nigeria. *Photo credit: IDRC*

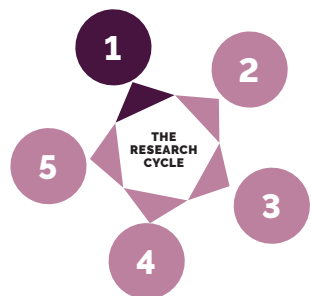
study variables and choosing related data collection tools or approaches (Stage 2 describes this in more detail). You can return to this matrix at key points during study development to review whether the domains of interest have been appropriately integrated.

Identify relevant social stratifiers (equity dimensions) beyond gender:

Which social stratifiers, other than gender, are relevant to your study? Consider how these social stratifiers should be included in your study design. Do these stratifiers point to subgroups of women you need to consider in your methodology<sup>9</sup>? For instance, including relevant stratifiers can guide you in decisions about how data is collected in baseline studies, as well as in how interventions are designed and with whom.

Identify gaps in current gender and equity evidence relevant to your research topic:

As mentioned before, if you encounter a lack of published research when completing your gender and equity matrix, this does not necessarily mean that the domain is irrelevant to your study<sup>23</sup>. Instead, it is possible (and even likely) that this gap reflects the general lack of evidence about gender in relation to AMR. If you choose not to address these gaps in your study, you can note them as part of your recommendations for future research when reporting your findings.



### CASE STUDY 1: Community-acquired UTIs and antibiotic use



When reviewing their completed gender and equity matrix, the research team in Tanzania identified women's lack of decision-making power in household spending (a **gender relations domain**) as relevant to their vulnerability to AMR (e.g., being unable to purchase a full course of antibiotics). The team also identified area of residence as an important **social stratifier**. For instance, women in rural areas with lower access to clean water have a heightened UTI risk. Finally, the findings in the gender and equity matrix highlight a lack of available national data on gender bias in prescriber practices (a **research gap**). If resources allow, the team could include this gap as an area to explore in their study. For example, they could conduct a situational analysis that collects sex-disaggregated data on antimicrobial prescriptions or physician consultations. Key informant interviews or focus groups could reveal perspectives relating to prescriber practices or other gaps in the gender and equity matrix.

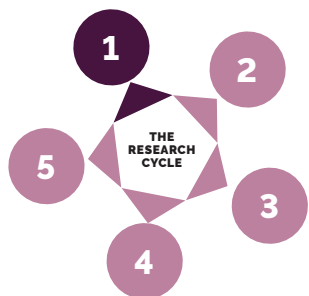


### CASE STUDY 2: Development of an aquaculture vaccine



Religious and gender norms (**social stratifier and gender relations domain**) about the domestic and social roles of women mean that some women working in household aquaculture operations cannot access awareness campaigns, information services, veterinary services or community networks without a male escort. A potential research gap is the lack of sex-disaggregated data across all value chain activities, including subsistence, where women's contributions to household aquaculture operations are categorised as housework and therefore overlooked in policy and programmes. The team can consider how such data gaps might impact their vaccine adoption plan. Without this information, they cannot know if awareness campaign strategies are accessible and benefit everyone equally.





### Refine stakeholder and community engagement:

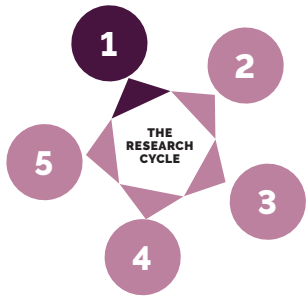
Finally, the findings from your gender and equity analysis will help you to rethink your stakeholder engagement analysis and engagement plan. Taking the insights from your matrix into account, do you have appropriate stakeholder groups and organisations engaged? If not, who could be added to increase representation across stakeholders? For instance, you could consult representative associations like women's groups or small-scale farmer associations.

The insights obtained from conducting a gender and equity analysis are not only helpful in conceptualising your study but, as subsequent sections will show, are also relevant later in the research cycle. They can help you identify which groups to include in data collection, what the best recruitment strategies might be, and how to develop gender-related questions in data collection instruments. They can also help with identifying relevant variables or codes for data analysis and choosing appropriate ways to disseminate your findings or engage with end users <sup>23</sup>.



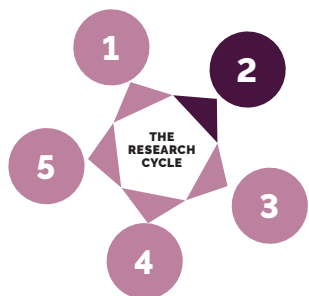
## Checklist

- Have you conducted a gender and equity analysis to identify potential gender considerations related to your research topic? Has this refined your research question(s) and influenced how you design your methodology?
- Does your gender and equity analysis draw on data sources from the study's local context?
- Did you include social stratifiers beyond gender in your gender and equity analysis?
- Are the topic domains in your gender and equity matrix clearly related to your study objectives?
- Have you identified community consultation activities that can strengthen the contextual relevance of your study? Do these activities include stakeholders that can share local gender and equity knowledge and experience?
- For laboratory-based studies with a community engagement and innovation adoption plan, does the plan show an understanding of the gender dynamics of communities, the barriers people may face in accessing innovation products and how you intend to address these barriers?



### Further reading:

- Charani, E. et al. (2021). Navigating sociocultural disparities in relation to infection and antibiotic resistance—the need for an intersectional approach. *JAC-Antimicrobial Resistance*, 3, 1–7. <https://pubmed.ncbi.nlm.nih.gov/34604747/>
- JHPIEGO (2016). *Gender analysis toolkit for health systems*. Available from <https://gender.jhpiego.org/analysisitoolkit/>
- Morgan, R., Davies, S. E., Feng, H., Gan, C. C. R., Grépin, K. A., Harman, S., Herten-Crabb, A., Smith, J., & Wenham, C. (2022). Using gender analysis matrixes to integrate a gender lens into infectious diseases outbreaks research. *Health Policy and Planning*, 37(7), 935–941. <https://doi.org/10.1093/heapol/czab149>
- WHO. (2011). *Taking sex and gender into account in emerging infectious disease programmes: An analytical framework*. WHO.
- WHO-TDR. (2020). *Incorporating intersectional gender analysis into research on infectious diseases of poverty: A toolkit for health researchers*. World Health Organisation.



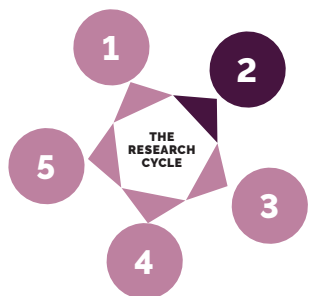
## Stage 2: Proposal development, study design and setting up M&E

During proposal development, you can draw on the findings from your matrix to inform how you apply a gender and equity lens to your study design, monitoring and evaluation (M&E) plan, and the composition of your team. The benefits of clearly illustrating gender and equity considerations in your proposal include:

- **Making your application stand out:** Funder application guidelines and institutional ethics applications increasingly require researchers to indicate how they will integrate gender and equity considerations throughout their study. Even when this is not required, including this information strengthens your study's quality and social relevance and makes your application more competitive.
- **Avoiding the need to take corrective action later, saving time, money and resources:** A zoonotic disease surveillance and response study in Guatemala illustrates the dangers of omitting gender considerations in the design phase <sup>56</sup>. At the study's inception, community meetings were mainly attended by men, leading to decisions that overlooked household practices affecting the lives of children,

women and livestock. It emerged that women were primarily responsible for tasks such as collecting biomedical samples, ensuring treatment adherence, and implementing preventive measures. The team retrospectively redefined its objectives, introduced gender-inclusive activities, and redirected resources accordingly.

- **Ensuring that implementing gender and equity-related activities is feasible:** A common occurrence when considering gender and equity in research is 'gender evaporation', where, despite good intentions, the relevant activities are not fully implemented or not implemented at all. This is often the result of inadequate planning. The proposal development stage provides an opportunity to ensure that you allocate the necessary time and resources, including expertise <sup>57</sup>.



## Gender and equity in study design

Three main gender and equity components should be considered in your study design<sup>9</sup>. These include identifying:

- 1 Gender and equity analytical questions
- 2 Gender and equity variables
- 3 Data collection methods/tools

The findings from your gender and equity matrix can guide you in integrating these components during the design phase. For all components, it is important to keep in mind any biological and social stratifiers you identified in your matrix.

You can develop gender and equity **analytical questions** based on the area(s) of inquiry you identified as relevant to your study. For example, in Case Study 1, the information in the matrix indicated that restrictions on women's decision-making power influence their access to healthcare. Based on this, an analytical question could be, "In what ways do limits on women's decision-making power influence how they access and use antibiotics?" In Case Study 2, local gender norms and other overlapping factors – such as geographic location and religion – influence women's access to information and veterinary resources. Based on this, an analytical question could be: "In what ways do differences in women's decision-making power and movement outside of the household influence their participation in awareness campaigns?"

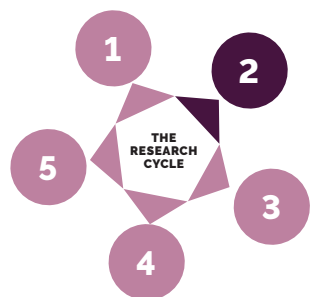
Having identified relevant gender and equity analytical questions, you will now address these questions through the remaining two study design components.

**Gender and equity variables** are proxies for, or indirect measures of, how gender relations manifest<sup>58</sup>. It is difficult to assess gender power relations directly, but gender variables – such as women's control over their earnings – can provide information to answer your gender analysis questions.

Reflection questions for monitoring and evaluation:

- Have you included gender and equity in your theory of change and related indicators (including process and outcome indicators) in your M&E plan? For instance, a gender-sensitive process indicator could assess the number of men and women attending a community consultation workshop.
- Are there differences within groups, based on social and biological stratifiers, that should be considered when developing indicators? For the above example, you might need to consider attendance by different age groups of women, or women from different socio-economic groups.
- Have you considered qualitative approaches to capture complex changes not easily measured using quantitative M&E methods? For instance, if a process indicator identifies gender disparities in community workshop participation, interviews can shed light on possible reasons.
- Have you identified at which points in your study, and by whom, gender and equity-related monitoring and evaluation data will be collected?





The final study design component focuses on identifying appropriate **data collection items or tools** to address your analytical questions. These could be quantitative, such as survey items about the gender variables you identified (e.g., “Who usually makes decisions about healthcare

for yourself?”). The tools could also be qualitative, such as interview questions exploring different antibiotic use decision-making pathways among women, men and other gender identities.

Table 5: Integrating gender and equity in study design

Area of inquiry identified in gender and equity matrix	1 Gender and equity analytical questions	2 Gender and equity variables	3 Questions in data collection tools
<p>Women's decision-making power (gender relations domain) impacts appropriate antibiotic use (topic domain).</p>	<p>In what ways do limits on women's independent decision-making about their healthcare influence how they access and use antibiotics?</p>	<p>Decision-making about own healthcare.</p> <p>Decision-making about leaving the house without asking permission from husband/partner.</p> <p>Decision-making about small and large purchases.</p> <p><i>(Consider if data for these variables might need to be disaggregated according to other social stratifiers, e.g., rural or urban area of residence.)</i></p>	<p>Quantitative survey item (from national DHS Women's Questionnaire):</p> <p>Who usually makes decisions about healthcare for yourself?</p> <p>a. You</p> <p>b. Your husband/partner</p> <p>c. You and your husband/partner jointly</p> <p>d. Other: _____</p> <p>Qualitative interview or focus group discussion question:</p> <p>Can you tell me about how the decision for you to attend the clinic was made?</p>

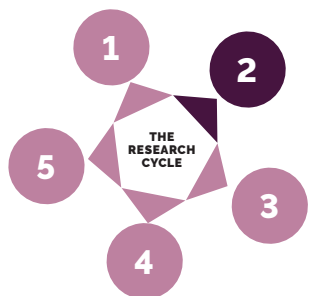


Table 5 summarises the three gender and equity study design components. The table is adapted from resources developed by WHO-TDR (2020), RADAR (2020) and the Gender and COVID-19 Project (2021). The WHO-TDR (2020) toolkit provides in-depth guidance on each component in the table. Drawing from Case Study 1, the table provides illustrative examples for addressing the three components. You can use the table to assess each gender relations domain against the three components (in this example, we only include decision-making power). Keep in mind that not all gender relations domains will be equally relevant, as indicated by your gender and equity matrix findings. While you will need to adapt the table to suit your study, a systematic tool like this can guide your thinking and spark ideas.

### Research team and environment

Proposal development is an important point at which to revisit gender and equity considerations concerning two components: team composition and research environment <sup>61</sup>.

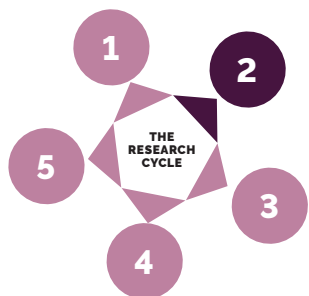
Despite progress, women and other underrepresented groups still face systemic barriers to participating fully in research <sup>62</sup>. Systemic barriers are attitudes, practices or policies denying certain people equal access to employment, services or programs <sup>61</sup>. The impact of these barriers may be unintentional and even invisible to those not directly affected by them. For instance, advanced animal healthcare training is typically structured around



Scientists check water samples collected from different parts of Bangalore, India.  
*Photo credit: IDRC*

long periods away from home. This structure makes it difficult for women who are primary caregivers to train as veterinarians or animal health assistants <sup>45</sup>. Even in disciplines with increasing gender parity, women may still be excluded from leadership and decision-making roles. In global health organisations, over 70% of leaders are male, and women from LMICs constitute only 5% of leadership positions <sup>63</sup>.

Addressing gender diversity in teams is not only a question of equal rights; it also strengthens research excellence. Innovation, problem-solving and decision-making improve in teams that bring diverse perspectives, including diversity in relation to gender identity <sup>64,65</sup>. Breaking down systemic barriers requires deliberate actions and is not only about having a mix of different gender identities in your team. It is also about ensuring a supportive, respectful



and safe research environment. In your proposal, you can discuss practical steps you have taken, or will take, to advance equality and diversity in your research team

and field staff, and to ensure an inclusive research environment <sup>57,66</sup>.

## Checklist

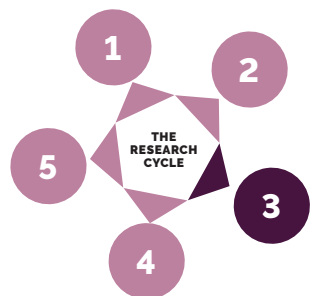


- Have you used the findings from your gender and equity matrix to identify gender and equity analytical questions, gender and equity variables, and appropriate data collection tools or items?
- Do you have a team member with the right skills and experience to address gender and equity considerations in your study? If not, can you include a partner organisation or appoint a consultant with gender and equity expertise?
- If you are including a partner organisation or consultant, have you considered if they are familiar with the local research context? How will they transfer gender and equity knowledge and skills to the team?
- Have you considered sharing your proposal with community leaders, identified stakeholders or a community advisory board (if you have established one) for their input on what your study intends to do?
- Do you have clear, fair, and transparent procedures in place to ensure that team members have equal access to opportunities for networking, leadership training, manuscript authorship, conference attendance, and any related financial support?
- Do you have a plan to ensure all team members are familiar with institutional and donor policies regarding parental leave, harassment, bullying, and sexual violence?
- Do the research activities and timeline allow all team members to meet the demands of their work and personal lives, particularly women who often shoulder the bulk of caregiving responsibilities?
- Can you include concrete measures in your work plan and budget to ensure a supportive research environment (e.g., a private nursing room, flexible study-related travel such as multiple shorter trips away from home rather than one long trip)?
- Does your budget include all expenses related to integrating gender and equity considerations in your design, work plan, and team composition?



### Further reading:

- Morgan, R. et al. (2016). How to do (or not to do)... gender analysis in health systems research. *Health Policy and Planning*, 31(8), pp. 1069–1078. <https://pubmed.ncbi.nlm.nih.gov/27117482/>
- WHO-TDR. (2020). *Incorporating intersectional gender analysis into research on infectious diseases of poverty: A toolkit for health researchers*. World Health Organisation.
- Morgan, R., Garrison-Desany, H., Hobbs, A. J., & Wilson, E. (2022). Strengthening effectiveness evaluations through gender integration to improve programs for women, newborn, child, and adolescent health. *Global Health Action*, 15, 2006420. <https://doi.org/10.1080/16549716.2021.2006420>



## Stage 3: Implementation and data collection

Incorporating a gender and equity lens into study implementation means recognising that power dynamics and biases can influence the research process itself<sup>24</sup>. Gender and equity considerations can impact the quality and validity of findings at multiple points during study implementation.



*Power dynamics and biases can influence the research process itself.*



### Sampling and recruitment

Gender norms, relations and inequalities can unintentionally affect who is chosen for research participation<sup>9</sup>. For instance, access to services is often influenced by gender-related barriers. If your research relies on recruiting participants at contact points with health, veterinary or other services, think about and consider talking to relevant community stakeholders and/or gender experts (if you do not have a gender expert on your team) about who might be marginalised in those settings and unintentionally excluded from your study. You might also consider the power dynamics at play when your recruiters approach potential study participants. Are those who are approached – particularly women and gender minorities – empowered to say no? If the recruiters are men, how can you avoid gendered power imbalances influencing responses? What other imbalances might be at play? Partnering with trusted community organisations

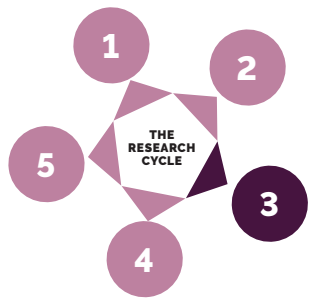
#### CASE STUDY 1: Community-acquired UTIs and antibiotic use



**Sampling:** In Tanzania, the team's gender and equity matrix highlighted the influence of household gender dynamics in women's decision-making about their own healthcare. This led the team to include not only women but also, where relevant, their partners as participants in the study.



**Recruitment:** Women were recruited via community healthcare facilities. A limitation of this approach is that women not seeking healthcare – such as those far from facilities and/or without resources to travel – are excluded. The team addressed this equity consideration by asking the nurses to identify influential persons from their target areas who would then be contacted to assist the team to identify women to be interviewed via mobile phone.



to reach vulnerable target populations is one way of navigating these challenges (see point two below).

Some important considerations in AMR research include:

- Women and men have different health-seeking behaviours that must be considered when recruiting participants from healthcare facilities. For instance, community-level antibiotic use studies often rely on healthcare visit exit surveys at primary care facilities <sup>67</sup>. Men, however, tend to be underrepresented in these settings due to masculinity norms that discourage them from seeking help. When they do seek care, men are more likely to visit informal pharmacies and private clinics <sup>4</sup>. **Recruiting participants for exit surveys at formal and informal facilities can provide a more complete picture of community-wide antibiotic use and shed light on potential gender differences.**
- Sexual and gender minorities face stigma and discrimination in healthcare settings due to homophobia and transphobia, leading to delayed health-seeking or even care avoidance <sup>68</sup>. For instance, the invisibility of transgender persons in tuberculosis (TB) interventions contributes to their exclusion from the AMR response, despite evidence of high TB vulnerability in this group <sup>69</sup>. **A South African study about transgender women's health provides a helpful model for recruiting this hard-to-reach population, where the study team partnered with a transgender-**



*Men, however, tend to be under-represented in healthcare settings due to masculinity norms that discourage them from seeking help.*



### CASE STUDY 2: Development of an aquaculture vaccine

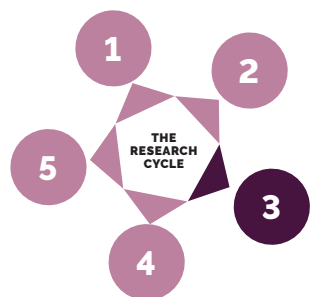


In Indonesia, the gender and equity matrix highlighted women's critical role in the management of fish farming enterprises and processing. Women's contributions are, however, often dismissed as domestic work. The team therefore included women in household aquaculture enterprises in their adoption plan. They identified existing women's groups in rural and indigenous communities as strategic partners for dissemination and education about vaccines as an AMR mitigation strategy in animal health.



**led civil society organisation at each stage of the research, including when developing sampling and recruitment strategies <sup>70</sup>.**

- Women are often overlooked in recruitment for animal health AMR studies. Extension services and animal vaccination campaigns often target men, either



because women are not recognised as farmers, or because the timing and location of animal healthcare campaigns make it difficult for women juggling multiple responsibilities to make the trip. A Ugandan study about women's participation in livestock vaccine value chains used 'focus meals' – an innovative modification of traditional focus groups – to address gender bias in conventional recruitment practices. Focus meals are impromptu gatherings of randomly selected participants around a meal in a semi-public setting like a market <sup>15</sup>.

- In quantitative studies, it is important to ensure that you maintain a sufficient sample size across different gender and social categories to allow for adequate statistical power. A common pitfall at the data analysis stage is not being able to explore sex differences or gender and equity analytical questions because the sample size for different subgroups is not large enough (e.g., women of different age groups or socio-economic categories).

Addressing the limitations of conventional sampling and recruitment processes might take additional time and money. This should be considered when developing the work plan and budget.

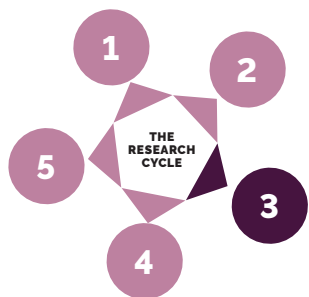
## Data collection processes

To address gender and equity in data collection, one should consider factors such as the timing and location of data collection, the individuals present during the process, and the identity of the data collector <sup>9,24</sup>.

“ *An indirect cost that women might incur to participate in study activities is arranging childcare.* ”

**Timing and location:** Consider potential restrictions on women's ability to participate, such as requiring permission from partners to travel to the study location or having limited free time due to household responsibilities <sup>9</sup>. Men, women and people with other gender identities might be differently burdened or impacted by data collection processes. For instance, an indirect cost that women might incur to participate in study activities is arranging childcare. Consider what steps you can take to design inclusive processes, and who you can approach to help you (e.g., community groups).

**Who is present:** Power relations and gender norms can impact the quality of data collected if others, e.g., partners or other household members, are present during data collection <sup>9</sup>. The participation of women or other



marginalised groups in data collection does not always mean they can freely express their views <sup>26</sup>. Consider if having sex- or age-separated data collection activities might contribute to more accurate and better-quality information. There are no clear guidelines on combining or splitting different groups for data collection. Consult with researchers or stakeholders who are knowledgeable about what might work within the study context.

**Who collects data:** The gender identity of the person collecting data can also affect the extent to which participants freely share certain information. This is especially true for sensitive topics. For example, women are more likely to share information about reproductive health or gender-based violence with female interviewers. This is important to keep in mind when hiring data collectors <sup>71</sup>.

### Gender-sensitive training for data collectors

Team members who recruit participants, obtain informed consent, and collect data must be trained in gender and sociocultural sensitivity if gender and equity considerations are to be successful <sup>71,72</sup>. For instance, data collectors should be trained to recognise and manage their own biases, values, and sociocultural backgrounds so that these do not influence data collection. Local gender or women's rights NGOs, community-based organisations and gender studies departments at universities are

#### CASE STUDY 1: Community-acquired UTIs and antibiotic use



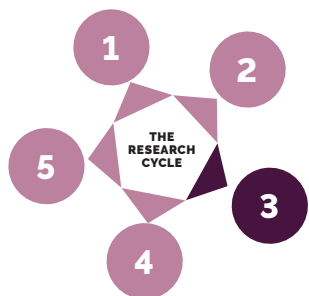
**Data collection:** The project team opted for focus group discussions to explore perspectives on UTIs, antibiotic use and AMR. The team initially planned to bring women and their male partners together in the focus groups.



The project's community advisory board was, however, concerned that having mixed groups might constrain women's voices, due to local gender norms that discourage women from sharing their views in an open forum and/or taboos about open discussion of women's health issues. With this in mind, the team decided on:

- Having separate focus groups for men and women, scheduled at times best suited for each group.
- Offering childcare and transportation to all participants.
- Ensuring focus group facilitators are trained in gender and sociocultural sensitivity.





valuable partners in such training <sup>21</sup>. Scheduling regular team reflection and debriefing meetings – especially before and after data collection – can also help identify

possible biases and assumptions <sup>9</sup>. If feasible, a gender expert as part of your research team can offer support in designing these strategies.

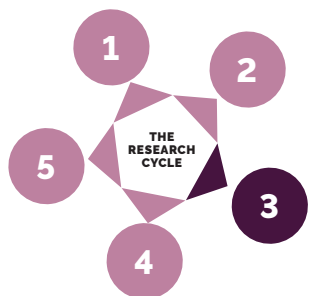
### CASE STUDY 2: Development of an aquaculture vaccine

The considerations raised in this section can assist in designing a gender-sensitive vaccine adoption plan. Legally, married women in Indonesia do not have the same rights as men to be heads of households <sup>33</sup>. Consequently, men are assumed to be lead operators in household aquaculture even when women play an active role. Engagement and adoption strategies must be creatively thought through with local networks of male and female stakeholders to ensure equal involvement of men and women without undue burden. For example, in rolling out a public awareness campaign, the team might:

- Partner with trusted community organisations and women's networks to facilitate community entry.
- Partner with health facilities to integrate AMR awareness in human health and aquaculture, focusing on strategies for mitigation in both cases.

- Use locally trained gender-aware facilitators to lead engagement.
- Have separate engagements for men and women.
- Use existing gathering places to engage women where women's networks and groupings already congregate, e.g., educational, cultural, religious or other community gatherings.





## Checklist

- Where applicable, have you ensured the sample sizes of different sub-groups are adequate to allow for comparisons during analysis?
- Have you identified recruitment strategies that will ensure you reach all potential participants, including marginalised or hard-to-reach persons?
- Did you identify measures to enhance the likelihood of women's participation in your study, considering the multiple roles they fulfil in families and local norms about travelling away from home? Who can you consult to assist you with designing inclusive processes that can overcome some of the barriers women face in participating fully?
- Have you taken steps to ensure that data collection takes place under circumstances where all participants, especially those who are marginalised, can express themselves freely and without fear of repercussions?
- Have recruitment and data collection teams completed training in gender and sociocultural sensitivity?
- Have you scheduled regular team debriefing meetings during study implementation where the team can identify and address possible gender biases and assumptions impacting the research process?

## Further reading:

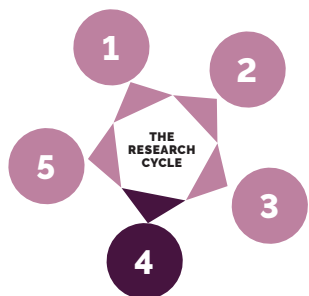
Colaço, R. & Watson-Grant, S. (2021). A global call to action for gender-inclusive data collection and use. *Policy Brief*.

Hunt, J. (2004). Introduction to gender analysis concepts and steps. *Development Bulletin*, 64, pp. 100–106.

Morgan, R. et al. (2016). How to do (or not to do)... gender analysis in health systems research. *Health Policy and Planning*, 31(8),

pp. 1069–1078. <https://pubmed.ncbi.nlm.nih.gov/27117482/>

WHO-TDR. (2020). *Incorporating intersectional gender analysis into research on infectious diseases of poverty: A toolkit for health researchers*. World Health Organisation.



## Stage 4: Data analysis

Incorporating gender and equity considerations in data analysis has several benefits. Doing so can enhance the accuracy and validity of findings since pooling data from diverse participants can mask important differences within and between groups. It can provide new insights and inform tailored, more successful AMR solutions <sup>73</sup>. Not attending to gender and equity considerations during analysis can result in biased or incomplete conclusions and recommendations that overlook or even harm certain groups.

### Common pitfalls when incorporating gender and equity considerations in data analysis

Some of the ways that biases and stereotypes can impact data analysis, along with helpful strategies to avoid these pitfalls, include the following:

**Conflating sex and gender:** Assumptions that differences between men and women are based only on biology can lead to overlooking sociocultural and structural influences on the development and spread of AMR. For example, when disaggregating livestock and aquaculture operations ownership in Vietnam by sex, Pham-Duc and colleagues found that female managers/owners used

fewer antimicrobials than their male counterparts <sup>32,74</sup>. While providing valuable data, this sex-based analysis stops short of explaining the reasons for these different treatment practices. Analysing how the topic domain of antibiotic use interacts with relevant gender relations domains can provide a more complete understanding.

For instance, a qualitative analysis that explores gender-related factors – such as women's access to financial resources and extension agents, or sources of AMR information – can shed light on gender-related drivers of antibiotic use and misuse. A helpful strategy to avoid this pitfall is to ensure that you include someone with gender expertise in the data analysis process and have well-defined gender variables and analytical questions.

**Disregarding differences within and between different gender identities:** Failing to account for the possible overlap between gender and factors such as race, age and socio-economic status can result in oversimplified analyses that miss the complex experiences of women, men and other gender identities. This can harm the accuracy of research evidence <sup>24,75</sup>. You can avoid this pitfall by ensuring that you include the social stratifiers in your study design in your analysis. Sometimes, researchers collect disaggregated data but fail to maintain



disaggregation during the analysis or, as in the Case Study 1 example on the next page, do not have a big enough sample size for statistical analysis.

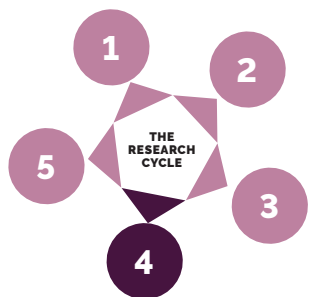
“ *Failing to account for the possible overlap between gender and factors such as race, age and socio-economic status can result in oversimplified analyses.* ”

**Implicit bias:** Researchers, like anyone else, may unknowingly hold biases that affect the data analysis. Bias can result in unconsciously interpreting data in ways that confirm preconceived notions or stereotypes about particular groups. For example, as described elsewhere in this document, the stereotype that farming is a masculine activity and that men are therefore more suited to agriculture has resulted in an overemphasis on men’s roles in AMR and animal health. This bias overlooks women’s contributions to managing livestock health. As before, ensuring a researcher with gender expertise assists with data analysis can minimise the influence of researcher bias. In qualitative studies, having two or more coders helps expose and reduce bias and increases the trustworthiness of the findings <sup>76</sup>. Additionally, presenting your preliminary analysis to other researchers and, if feasible, to a study advisory board or community stakeholders can help identify potential biases <sup>77</sup>.

**Viewing gender through a deficit lens:** Given the prevalence of unequal gender norms, it is common for studies to focus solely on negative gender-related experiences and outcomes. To avoid this deficit perspective, pay attention to variables such as resilience and agency and how they may add value to the research. You can also highlight cases where individuals challenge harmful gender norms. Chikovore and colleagues (2017) describe how some men in their TB study in Malawi challenged expectations of men to be strong and invulnerable. Resisting these gender norms helped them to pursue health-seeking behaviours such as avoiding alcohol use and smoking, adhering to treatment, and seeking psychosocial support <sup>78</sup>.



Men in a discussion at a community intervention meeting in Abuja, Nigeria.  
Photo credit: Oni Abimbola



### CASE STUDY 1: Community-acquired UTIs and antibiotic use

The team presented their preliminary analysis at a departmental staff meeting. After their presentation, a staff member commended the team for including both urban and rural sites during data collection, since geographic inequality is a prominent focus in their research about healthcare access.

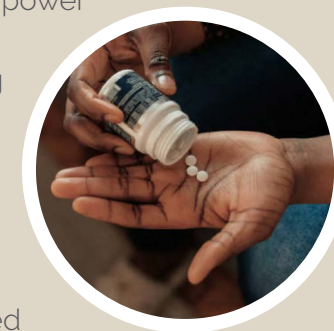
The staff member was curious about what the team found when comparing women's antibiotic practices across these sites.

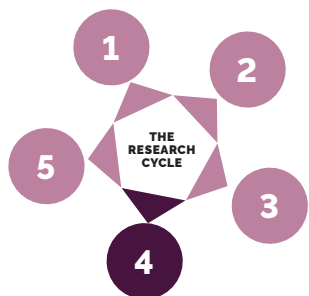
The team realised that their focus on the social stratifiers they identified as important (rural and urban location) had not been carried through into the analysis. They re-analysed the quantitative descriptive data for associations, and potential correlations, between location, sex and antibiotic practice. In the re-analysis, they realised they could only make statements of association because the number of social stratifiers of interest was very small. The team recognised this as a lost opportunity for evidence-based findings on how gender interacts with location to shape women's antibiotic choices.

In a second data analysis meeting, the team reviewed the descriptive data on the gender and equity related variables of women's decision-making authority

(proxies for gender norms and power relations). They then used the matrix as categories for coding the qualitative data from their questionnaire "Can you tell me about how the decision for you to attend the clinic was made in your household or family?" Finally, they explored the data for themes of how gender power relations (decision-making authority) interact to affect women's antibiotic practices in these themes. Unlike in the quantitative analysis, the team identified some differences between rural and urban women's perceptions of decision-making and used participant quotes to illustrate these differences.

In the interpretation stage of analysis, the team used social theory – an adapted version of the Social Ecological Model (SEM) – to explain how gender, location and other social stratifiers interact at the individual, social environment, physical environment and policy levels to produce and reproduce antibiotic practices patterns and to suggest points for intervention <sup>79</sup>.





Community engagement on social innovations in health.  
Photo credit: TDR J. Nabirye / SIHI

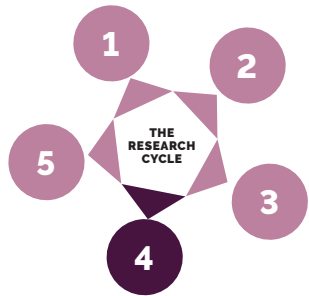
## Using a gender and equity matrix to guide your data analysis

Your completed matrix can help you systematically integrate gender and equity considerations in your analysis:

- Before conducting your data analysis, reassess your completed gender and equity matrix. At this point, you might add new insights to the matrix – likely, additional literature searches, the data collection process,

fieldwork observations and community engagement activities have deepened your knowledge about the gender and equity dimensions in your study setting<sup>23</sup>. Updating the matrix ensures that your analysis benefits from these additional insights.

- Use the updated matrix to refine your gender and equity variables for quantitative analysis or as a coding framework for qualitative analysis. For instance, as illustrated in Case Study 1, the team used the gender matrix to code interview or focus group data and identify themes related to each of the gender relations domains.
- Draw on gender and social theories to interpret your findings, including similarities and differences within and between themes and subgroups and how these relate to your research topic<sup>79</sup>. Helpful sources are included under 'further reading' at the end of this section.



### CASE STUDY 1: Community-acquired UTIs and antibiotic use

In the second data analysis meeting described earlier, the team used the matrix variables and topics as codes to populate the cells with participant quotes.

For example, the following quotes went into the codes 'vulnerability to disease/illness' and 'decision-making authority' cell:

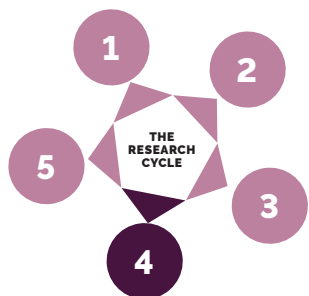
*"My husband decides when I can go to the clinic, even if I am feeling sick. Sometimes, I have to wait for him to come home before I can go. The clinic is not that far."* (female respondent 1, rural site).

*"My husband is away for work in another town, so I make my own decisions. Usually, I go to my pharmacy, and she gives me what I need because I have had these pills before. She knows me. It's a bit different when he comes home then I must wait."* (female respondent 2, urban site).

Some members thought they also fitted into the 'response to treatment' and 'decision-making authority' cell. The team decided to leave the quotes in both places for this first round of coding. When all the data were coded, the team reviewed the whole matrix and removed duplicate coding.

Reflecting on emerging themes, the team noticed that in these two quotes, gender relations influenced the timing of UTI treatment seeking decisions of rural and urban women but not where and how they accessed antibiotic treatments.





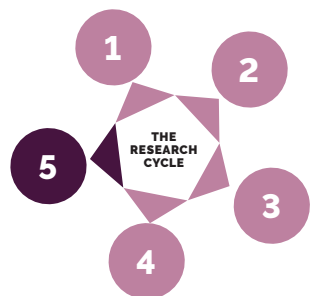
## Checklist

- Did you ensure that a team member (or consultant) with gender expertise was involved in conducting the analysis?
- Have you differentiated between sex and gender in your analysis?
- Have you analysed how biological and social stratifiers interact with the relevant gender domains?
- Have you explored similarities and differences within and between groups of women, men and persons with other gender identities?
- Have you used a gender or social theory to support your interpretations?
- If your study lends itself to it, have you invited the project advisory board (if applicable), stakeholders, and affected groups to provide feedback on the initial analysis and assist in refining the contextualisation of your findings?

## Further reading:

- Hammarström, A., & Hensing, G. (2018). How gender theories are used in contemporary public health research. *International Journal for Equity in Health*, 17(34). <https://doi.org/10.1186/s12939-017-0712-x>
- Jones, N., Mitchell, J., Cooke, P., Baral, S., Arjyal, A., Shrestha, A., & King, R. (2022). Gender and antimicrobial resistance: What can we learn from applying a gendered lens to data analysis using a participatory arts case study? *Frontiers in Global Women's Health*, 3, 745862. <https://doi.org/10.3389/fgwh.2022.745862>
- Larson, E., George, A., Morgan, R., & Poteat, T. (2016). 10 Best resources on intersectionality with an emphasis on low- and middle-income countries. *Health and Policy Planning*, 31, 964-969. <https://pubmed.ncbi.nlm.nih.gov/27122486/>
- Morgan, R. et al. (2016). How to do (or not to do)... gender analysis in health systems research. *Health Policy and Planning*, 31(8), pp. 1069-1078. <https://pubmed.ncbi.nlm.nih.gov/27117482/>
- O'Neill, J., et al. (2014). Applying an equity lens to interventions: Using PROGRESS ensures consideration of socially stratifying factors to illuminate inequities in health. *Journal of Clinical Epidemiology*, 67(1), 56-64. <https://pubmed.ncbi.nlm.nih.gov/24189091/>
- WHO-TDR. (2020). *Incorporating intersectional gender analysis into research on infectious diseases of poverty: A toolkit for health researchers*. World Health Organisation.





## Stage 5: Reporting and dissemination

Applying a gender and equity lens during the final stage in the research cycle – reporting and dissemination – can help you strengthen the quality and impact of your research outputs.

### Gender-sensitive and inclusive language and representation

The following are helpful practices for respectful and equitable language and visual representation in publications and other dissemination material.



A community information meeting in Jakarta, Indonesia.  
Photo credit: UN Women/Ryan Brown

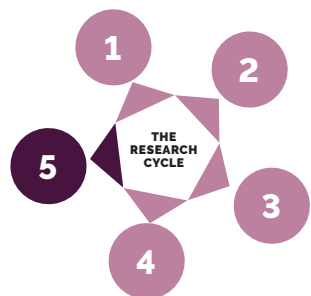
**Transparent and comprehensive reporting:** If your research produced gender-relevant findings, these should be highlighted in your outputs<sup>80</sup>. Relevant findings could include differences in outcomes, experiences, or challenges faced by women, men and people of other gender identities, and their implications. To address the historical lack of gender-related information in scientific reporting, many journal publication guidelines stress reporting findings of gender-based analyses irrespective of positive or negative outcomes<sup>80</sup> (Heidari et al., 2016). Should a journal provide the option to suggest peer reviewers when submitting a manuscript, you can suggest reviewers with expertise in gender and equity to provide constructive feedback. Considering that there might not be reviewers with expertise in applying a gender and equity lens to AMR, you could suggest gender experts in fields broadly related to your research topic, for instance, gender and agriculture or public health.

**Inclusive language and representation:** Unconscious bias and stereotypes in research outputs can perpetuate harm and even stigmatise vulnerable and marginalised groups. Ensure that the language used in reports and other materials is inclusive of different gender identities and other forms of diversity. Similarly, images used in materials should be thoughtfully chosen to be gender-sensitive and inclusive<sup>81</sup>.



*Unconscious bias and stereotypes in research outputs can perpetuate harm and even stigmatise vulnerable groups. [...] Ensure that language and images are inclusive of diversity.*



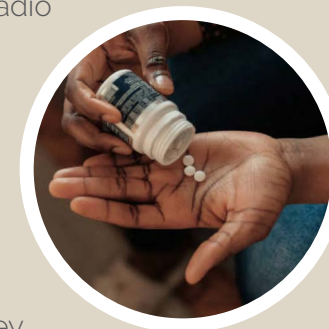


### CASE STUDY 1: Community-acquired UTIs and antibiotic use

**Reporting:** The team included a photograph of a community engagement event in a research summary for sharing findings with local decision-makers. Participants in the event were provided an opportunity to review the draft output prior to publication. Most of the participants indicated that they were pleased to see themselves represented in the output and that their contributions are acknowledged in the text. One of the participants, however, noticed that despite indicating on the day of the event that she does not want to have her photograph taken, she could be identified in one of the images. The team was able to select a different image.

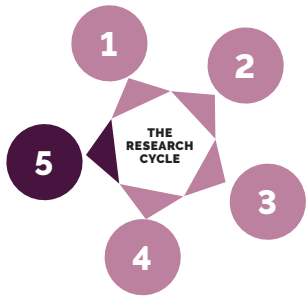
**Dissemination:** Having a small budget, the team limited other dissemination activities to a webinar with

an academic community and radio interviews. The webinar was recorded and made available for download. For the radio interviews, they prepared a guidance note for all team members who were willing to be interviewed, summarising key ideas they wanted to convey. This gave junior members in the team – all of whom reside in the study area – the confidence to participate in the radio interviews. This helped ensure that findings were shared in local languages. The guidance note included a section on culturally appropriate, gender-sensitive language.



**Respectful, empowering representation:** An analysis of photos in AMR and vaccination materials produced by global health organisations revealed that women and children tend to be depicted in ways that are not respectful of their privacy, dignity and individuality. This was especially true when images of people in LMIC settings were used in ways that had no connection to the document's stated purpose. The following are suggestions for more appropriate use of visual content, such as photographs:

- Follow standard ethical guidelines of your study's research ethics granting body when taking photographs of people, including asking consent from the individual(s) beforehand and clearly explaining how the images will be used<sup>82</sup>. When photographing children, consent needs to be obtained from a parent or guardian, in addition to obtaining the child's assent<sup>83</sup>.



*Incorporating direct quotations from individuals in the images can humanise and give them a sense of ownership of their depiction.*



Patients waiting to be attended to at St. Francis Hospital in Ifkara, Tanzania. The image protects individuals' privacy and includes relevant visual cues (a blank patient referral folder) to explain its use in an output about antibiotic use in referral hospitals. *Photo credit: Ben Langdon*

- Provide context to the image in the document, so that the relevance to the text is clear and the individuality of the persons in the photograph is respected. For example, captions can be used to explain how the image relates to the information in the material. The images can also include relevant visual cues. For instance, photographs used in material on AMR in public health settings can include elements such as test kits or a health facility sign. Such contextualisation is critical when using sensitive or distressing images, to avoid gratuitous use <sup>81</sup>.

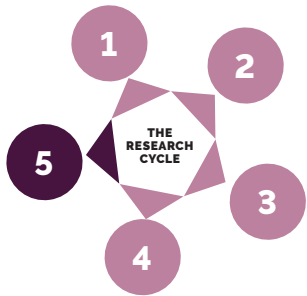


## CASE STUDY 2: Development of an aquaculture vaccine

The team emphasised gender-sensitive dissemination activities in their adoption plan, such as asking influential women in the aquaculture community to talk about AMR and vaccines on the radio, at markets and other women's gathering places, and at waiting rooms in child and maternal health clinics. The team also identified two male allies with the help of influential women and women's NGOs in the community. These male allies talked at dissemination events about the role women played in the aquaculture sector and how including women in knowledge dissemination events and decision-making contributed to better technical efficiency of household aquaculture operations, including uptake of vaccines.



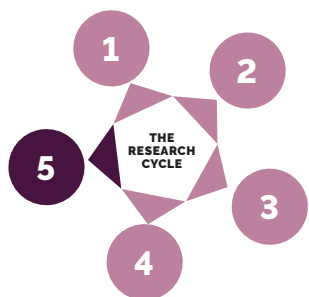
- If appropriate, incorporate direct quotations from individuals in images to humanise and give them ownership of their depiction <sup>81</sup>.



Veterinary Assistant Charity Mbogo vaccinating cattle, Likipia County, Kenya. *Photo credit: IDRC*

**Avoiding reinforcing stereotypes:** Efforts to highlight harmful gender norms should be balanced with care to avoid perpetuating stereotypes. Including instances where stereotypes are challenged, even if not common, can help you to balance accurate representations of contextual realities with examples of gender transformation.

For example, while women are underrepresented in veterinary fieldwork in many LMICs, material that includes photographs of female vet professionals administering vaccines can counter local stereotypes that women are not suited to this role.



## Gender-sensitive and inclusive dissemination practices

The following suggestions can assist you in communicating your findings to diverse audiences in ways that do not unintentionally reinforce marginalisation.

**Identifying target audiences for equitable dissemination practices:** The findings of your gender and equity matrix can help you identify any differences in your study setting in how men, women and people of other gender identities access information – such as through different media and technological formats – and tailor your dissemination strategies accordingly. Similarly, factors like living in non-urban areas, having limited literacy, and lacking access to technology such as smartphones, could lead to individuals being excluded from 'mainstream' dissemination practices.



### Tailoring dissemination strategies:

Once you have a better understanding of the groups you want to target, you can select the most appropriate strategies to reach them. Helpful strategies to ensure equitable access to research findings include adding clear, simple illustrations to dissemination material, using jargon-free language, and translating material into local languages. For example, Naemiratch and colleagues (2023) produced a booklet using illustrations to convey findings from a community-based



AMR dialogues project (details under 'further reading' at the end of this section).

### Consider which strategies will work in which context:

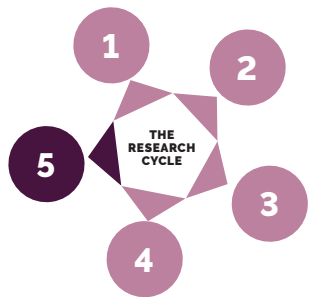
In many LMIC settings, community radio remains an important source of information and can be a practical, accessible dissemination platform<sup>85</sup>. Research in Ghana identified video screenings as an effective, low-cost way to share findings about product innovations with smallholder farmers<sup>86</sup>. Farmers without access to extension agents and low literacy levels preferred video screenings over printed materials. A disadvantage is that screenings are typically hosted in the evening, limiting access for female farmers tasked with household and caregiving responsibilities. In a study in Benin, video screenings hosted by women's groups were more effective in reaching female farmers<sup>87</sup>.



### Partnering with local community groups or NGOs:

Such groups can assist with identifying appropriate and accessible ways to share findings with local communities. Their feedback and input can ensure that your research dissemination is inclusive, relevant, and responsive to the needs of women, men and people with other gender identities. This can also help to promote participatory and inclusive research practices<sup>88</sup>.





## If appropriate, including participants in materials development and dissemination:

This can be a powerful way to increase impact. If undertaken ethically and respectfully, such inclusion can ensure materials are contextually relevant and empower participants to share their stories on platforms from which they might otherwise be excluded. In other words, this is a way to “elevate marginalized voices and connect participants with important spaces of influence” (Mullinax et al., 2018, p. 23).



## Improving accessibility in academic communities:

Female researchers often have less time to attend professional development and academic events, such as conferences, webinars, and workshops, due to the double burden of care and professional work<sup>88</sup>. To increase their participation, consider strategies such as recording webinars and making them available for on-demand viewing. Recordings also allow researchers with limited internet access to download content during periods of good connectivity.

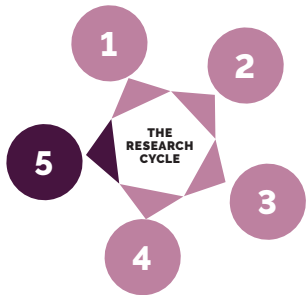


Simultaneous interpretation at events in multi-lingual settings can address language access barriers, although this can be costly and should be accounted for in your budget<sup>90</sup>. If you are presenting findings at a conference where language might be an access barrier, you can contact the organisers in advance to advocate for interpretation services, if not already included.

**Advocating for the importance of integrating gender in AMR research:** Use your research dissemination to highlight the importance of gender and equity considerations in AMR research, policy, and practice, and promote actions to address gender disparities. If your findings include policy recommendations, consider the outcomes about equal opportunities and a ‘do no harm’ approach for women, men and other gender identities<sup>9</sup>.

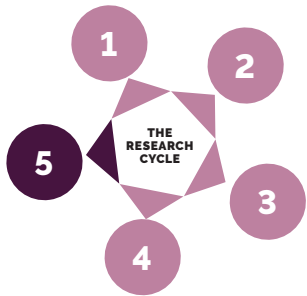
## M&E reflection questions:

- Does your dissemination plan include monitoring whether findings reach all intended groups, including marginalised individuals? For instance, dissemination event output indicators could include collecting attendees’ disaggregated sociodemographic data through registration sheets (with the option for attendees to withhold such information).
- Output indicators can also assess the quality and impact of dissemination through obtaining post-event feedback. This could include factors such as language, location, timing and cultural appropriateness of content. In low literacy or linguistically diverse settings, you can consider post-event focus groups or tools such as image-based surveys. Such surveys convey evaluation questions or statements through culturally relevant pictures, icons or symbols<sup>84</sup>
- Does your dissemination plan include opportunities to course-correct if you find gender and equity disparities in reach, participation or impact?



## Checklist

- Did you highlight gender-relevant findings in outputs or, if none were identified, state this?
- Have you reviewed outputs to eliminate stereotypical or stigmatising language or images?
- If using photographs or other visuals in outputs, have you ensured that ethical guidelines are followed and images appropriately contextualised in the documents?
- Have you identified gender and equity considerations that might limit some groups' access to research findings and defined target groups for dissemination?
- Have you tailored your dissemination strategy to reach marginalised groups?
- Have you considered seeking guidance from local community groups or NGOs on appropriate and accessible dissemination?
- Have you considered how including participants in material development and dissemination can improve contextual relevance, gender sensitivity and impact?
- When engaging academic communities, have you identified potential gender and equity-related participation barriers and strategies to address these?



## Further reading:

- Adams, N., Romero, F., & Everhart, A. (2023). *A toolkit for creating radically inclusive grassroots events*. TPATH. [https://edisgroup.org/wp-content/uploads/2023/06/TPATH\\_Toolkit\\_English.pdf](https://edisgroup.org/wp-content/uploads/2023/06/TPATH_Toolkit_English.pdf)
- Charani, E., Shariq, S., Pinto, A. M. C., Farooqi, R., Nambatya, W., Mbamalu, O., Abimbola, S., & Mendelson, M. (2023). The use of imagery in global health: An analysis of infectious disease documents and a framework to guide practice. *The Lancet Global Health*, *11*(1), e155–e164. [https://doi.org/10.1016/S2214-109X\(22\)00465-X](https://doi.org/10.1016/S2214-109X(22)00465-X)
- Naemiratch, B., Poomchaichot, T., Ruangkajorn, S., & Boonthaworn, K. (2023). *Summary of important points: AMR dialogue in Thailand*. Bangkok, Thailand: MORU. <https://zenodo.org/record/8024656>
- Pointer, R. (2021). *How to write about Africa in 8 steps: An ethical storytelling handbook*. Africa No Filter. <https://africanofilter.org/disruption/ethical-storytelling>
- Heidari, S., Babor, T. F., De Castro, P., Tort, S., & Curno, M. (2016). Sex and gender equity in research: Rationale for the SAGER guidelines and recommended use. *Research Integrity and Peer Review*, *1*(1), 2. <https://doi.org/10.1186/s41073-016-0007-6>



## Concluding remarks

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AMR is a pressing global issue, impacting human and animal health, food security, and safety. Women and marginalised groups, especially those living in LMICs, face heightened risks due to social and structural challenges. By integrating gender and equity considerations into AMR research, we can ensure broader benefits, reaching both the most and least advantaged groups within a population.

It also contributes to tailored, more effective AMR solutions. This document aims to spark ideas and provide helpful suggestions as you navigate this journey. We hope that you will come back to it many times across multiple research projects, each time applying something new.

## Glossary

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**Gender** is socially and culturally constructed and refers to the "roles, behaviours, activities, attributes and opportunities that any society considers appropriate for men and women, boys and girls" and other gender identities <sup>9</sup>.

**Gender equality** is the concept that men and women, boys and girls and other gender identities "have equal conditions, treatment and opportunities for realising their full potential, human rights and dignity, and for contributing to (and benefitting from) economic, social, cultural and political development" (UNICEF, 2017, p. 3).

**Gender equity** is the process of being fair to men and women, boys and girls and other gender identities, "and importantly the equality of outcomes and results. Gender equity may involve the use of temporary special measures to compensate for historical or systemic bias or discrimination" (UNICEF, 2017, p. 3).

**Gender identity** refers to a person's self-identified gender identity, which can include male, female, transgender and non-binary identities <sup>72</sup>.

**Gender norms** refer to spoken and unspoken rules in the family, workplace, institution or global culture that influence individuals <sup>65</sup>.

**Gender relations** refer to power relations between individuals with different gender roles and identities <sup>65</sup>.

**Intersectionality** is a concept coined by Kimberlé Crenshaw and refers to overlapping, mutually reinforcing social identities and the related systems of oppression and/or discrimination <sup>91</sup>.

**Non-binary gender identity** refers to people with a gender identity that falls outside of the binary of male and female. They may identify as both male and female or as another gender, or their gender identity may change over time <sup>72</sup>.

**Sex** refers to the hormonal, chromosomal and anatomical characteristics that are associated with male, female and intersex bodies.

**Transgender** is an umbrella term used to describe people whose gender identity differs from their sex registered at birth <sup>72</sup>.

## References

1. Antimicrobial Resistance Collaborators. Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis. *The Lancet* 399, 629–655 (2022).
2. WHO. *Tackling antimicrobial resistance (AMR) together. Working paper 5.0: Enhancing the focus on gender and equity*. World Health Organisation (2018).
3. Khurana, M. P. *et al.* Mitigating antimicrobial resistance (AMR) using implementation research: A development funder's approach. *JAC-Antimicrob. Resist.* 5, (2023).
4. Jones, N. *et al.* Gender and antimicrobial resistance: What can we learn from applying a gendered lens to data analysis using a participatory arts case study? *Front. Glob. Womens Health* 3, 745862 (2022).
5. JHPIEGO. *Gender analysis toolkit for health systems*. JHPIEGO (2016).
6. Crenshaw, K. Mapping the margins: Intersectionality, identity politics, and violence against women of color. *Stanford Law Rev.* 43, 1241–1299 (1991).
7. Charani, E. *et al.* Navigating sociocultural disparities in relation to infection and antibiotic resistance—the need for an intersectional approach. *JAC-Antimicrob. Resist.* 3, 1–7 (2021).
8. O'Neill, J. *et al.* Applying an equity lens to interventions: using PROGRESS ensures consideration of socially stratifying factors to illuminate inequities in health. *J. Clin. Epidemiol.* 67, 56–64 (2014).
9. WHO-TDR. *Incorporating intersectional gender analysis into research on infectious diseases of poverty: A toolkit for health researchers*. World Health Organisation (2020).
10. Medina, M. & Castillo-Pino, E. An introduction to the epidemiology and burden of urinary tract infections. *Ther. Adv. Urol.* 11, 1756287219832172 (2019).
11. Schröder, W. *et al.* Gender differences in antibiotic prescribing in the community: a systematic review and meta-analysis. *J. Antimicrob. Chemother.* 71, 1800–1806 (2016).
12. Barasa, V. & Virhia, J. Using intersectionality to identify gendered barriers to health-seeking for febrile illness in agro-pastoralist settings in Tanzania. *Front. Glob. Womens Health* 2 (2022).
13. Islam, M. A. *et al.* Fecal colonization with multidrug-resistant e. coli among healthy infants in rural Bangladesh. *Front. Microbiol.* 10 (2019).
14. Simon, B. & Kazaura, M. Prevalence and factors associated with parents self-medicating under-fives with antibiotics in Bagamoyo District Council, Tanzania: A cross-sectional study. *Patient Prefer. Adherence* 14, 1445–1453 (2020).
15. Bikaako, W. *et al.* Breaking institutional barriers to enhance women's participation in and benefit from the Peste des Petits Ruminants and Newcastle Disease vaccine value chains for Sembabule district of Uganda. *PloS One* 17, e0270518 (2022).
16. Miller, B. A. *The gender and social dimensions to livestock keeping in South Asia: Implications for animal health interventions*. GALVmed (2011).
17. Kyotos, K. B. *et al.* Gendered barriers and opportunities for women smallholder farmers in the Contagious Caprine Pleuropneumonia vaccine value chain in Kenya. *Animals* 12, 1026 (2022).
18. Paez, A., Ihalainen, M., Elias, M. & Basnett, B. *The Gender Equality in Research Scale: A tool for monitoring and encouraging progress on gender integration in research for and in development*. (Center for International Forestry Research (CIFOR) (2019). doi:10.17528/cifor/007270.
19. Mariscal, J., Mayne, G., Aneja, U. & Sorgner, A. Bridging the gender digital gap. *Economics* 13 (2019).
20. Mitchell, J. *et al.* Community engagement: The key to tackling antimicrobial resistance (AMR) across a One Health context? *Glob. Public Health* 17, 2647–2664 (2022).
21. Glandon, D., Paina, L., Alonge, O., Peters, D. H. & Bennett, S. 10 Best resources for community engagement in implementation research. *Health Policy Plan.* 32, 1457–1465 (2017).

22. Wellcome. *Responsive dialogues on drug resistant infections: Enabling public-driven policies and action on antimicrobial resistance*. <https://cms.wellcome.org/sites/default/files/2021-02/responsive-dialogues-drug-resistant-infections-tollkit.pdf> (2021).
23. Morgan, R. *et al.* Using gender analysis matrixes to integrate a gender lens into infectious diseases outbreaks research. *Health Policy Plan.* 37, 935–941 (2022).
24. Morgan, R. *et al.* How to do (or not to do)... gender analysis in health systems research. *Health Policy Plan.* 31, 1069–1078 (2016).
25. WHO. *Taking sex and gender into account in emerging infectious disease programmes: An analytical framework*. WHO (2011).
26. FHI 360. *Gender integration framework: How to integrate gender in every aspect of our work*. FHI 360 (2012).
27. Manyau, S. *et al.* Antibiotics and the biopolitics of sex work in Zimbabwe. *Med. Anthropol.* 41, 257–271 (2022).
28. Green, D. L. *et al.* The role of multidimensional poverty in antibiotic misuse: a mixed-methods study of self-medication and non-adherence in Kenya, Tanzania, and Uganda. *Lancet Glob. Health* 11, e59–e68 (2023).
29. Sindato, C. *et al.* Knowledge, attitudes and practices regarding antimicrobial use and resistance among communities of Ilala, Kilosa and Kibaha districts of Tanzania. *Antimicrob. Resist. Infect. Control* 9, 194 (2020).
30. Barnes, A. C. *et al.* Autogenous vaccination in aquaculture: A locally enabled solution towards reduction of the global antimicrobial resistance problem. *Rev. Aquac.* 14, 907–918 (2022).
31. Chambers, J. A. *et al.* Understanding Vaccine Hesitancy in Vietnamese Fish Farmers. *Antibiotics* 11, 878 (2022).
32. Pham-Duc, P. & Sriparamanathan, K. Exploring gender differences in knowledge and practices related to antibiotic use in Southeast Asia: A scoping review. *PLOS ONE* 16, e0259069 (2021).
33. Sari, I., Rajartanam, S., Park, C. & McDougall, C. *Women's empowerment in aquaculture: Two case studies from Indonesia. Engagement, outcomes, and constraining and enabling factors for women in shrimp farming and fish processing* (2017).
34. Keenan, K. *et al.* Unravelling patient pathways in the context of antibacterial resistance in East Africa. *BMC Infect. Dis.* 23, 414 (2023).
35. Silago, V. *et al.* Multidrug-resistant uropathogens causing community acquired urinary tract infections among patients attending health facilities in Mwanza and Dar es Salaam, Tanzania. *Antibiotics* 11, 1718 (2022).
36. Sado, K. *et al.* Treatment seeking behaviours, antibiotic use and relationships to multi-drug resistance: A study of urinary tract infection patients in Kenya, Tanzania and Uganda. 2023.03.04.23286801 Preprint at <https://doi.org/10.1101/2023.03.04.23286801> (2023).
37. Lukman, K. M., Uchiyama, Y. & Kohsaka, R. Sustainable aquaculture to ensure coexistence: Perceptions of aquaculture farmers in East Kalimantan, Indonesia. *Ocean Coast. Manag.* 213, 105839 (2021).
38. Stacey, N. *et al.* Developing sustainable small-scale fisheries livelihoods in Indonesia: Trends, enabling and constraining factors, and future opportunities. *Mar. Policy* 132, 104654 (2021).
39. FAO. *The state of the world fisheries and aquaculture: Towards blue transformation*. <http://www.fao.org/documents/card/en/c/cc0461en> (2022) doi:10.4060/cc0461en.
40. Kayansamruaj, P., Areechon, N. & Unajak, S. Development of fish vaccine in Southeast Asia: A challenge for the sustainability of SE Asia aquaculture. *Fish Shellfish Immunol.* 103, 73–87 (2020).
41. Priya, T. A. J. & Kappalli, S. Modern biotechnological strategies for vaccine development in aquaculture – Prospects and challenges. *Vaccine* 40, 5873–5881 (2022).
42. Du, Y., Hu, X., Miao, L. & Chen, J. Current status and development prospects of aquatic vaccines. *Front. Immunol.* 13, 1040336 (2022).
43. World Bank. Tanzania. <https://data.worldbank.org/indicator/SE.ADT.LITR.MAZS?locations=TZ> (2023).
44. Mwanja, C. H., Herman, P. Z. & Millanzi, W. C. Prevalence, knowledge, attitude, motivators and intentional practice of female genital mutilation among women of reproductive age: a community-based analytical cross-sectional study in Tanzania. *BMC Womens Health* 23, 226 (2023).
45. Kaijage, A., Mgale, Y. J. & Dimoso, P. Exploring the effects of out-of-pocket payments on healthcare utilization in rural and urban Tanzania: A gender perspective. *Open J. Soc. Sci.* 11, 180–202 (2023).

46. Kitole, F. A., Lihawa, R. M. & Mkuna, E. Analysis on the equity differential on household healthcare financing in developing countries: empirical evidence from Tanzania, East Africa. *Health Econ. Rev.* 12, 55 (2022).
47. UNDP. Latest human development composite indices. Table 5: Gender Inequality Index (2021).
48. FAO. *Women's empowerment in aquaculture in Bangladesh and Indonesia: Insights from four case studies* (2017).
49. Treviño, M. & Murillo-Sandoval, P. J. Uneven consequences: Gendered impacts of shrimp aquaculture development on mangrove dependent communities. *Ocean Coast. Manag.* 210, 105688 (2021).
50. Wulandari, F. *Gender barriers in aquaculture and fisheries. An overview.* <https://pair.australiaindonesiacentre.org/wp-content/uploads/2020/07/Gender-in-aquaculture-v1.pdf> (2020).
51. Kruijssen, F., McDougall, C. L. & van Asseldonk, I. J. M. Gender and aquaculture value chains: A review of key issues and implications for research. *Aquaculture* 493, 328–337 (2018).
52. Vecchio, Y., Masi, M. & Adinolfi, F. From the AKAP to AKAIE model to assess the uptake of technological innovations in the aquaculture sector. *Rev. Aquac.* 15, 772–784 (2023).
53. Bosma, R. H., Nguyen, T. D., Calumpang, L. M. & Carandang, S. A. Gender action plans in the aquaculture value chain: what's missing? *Rev. Aquac.* 11, 1297–1307 (2019).
54. Aung, Y. M., Khor, L. Y., Tran, N., Shikuku, K. M. & Zeller, M. Technical efficiency of small-scale aquaculture in Myanmar: Does women's participation in decision-making matter? *Aquac. Rep.* 21, 100841 (2021).
55. Diedrich, A. *et al.* Socio-Economic Drivers of Adoption of Small-Scale Aquaculture in Indonesia. *Sustainability* 11, 1543 (2019).
56. Palmeirim, M. S. *et al.* Gender in public health research: Reflections on design and process across four research projects in low-and middle-income countries. *PLOS Glob. Public Health* 3, e0000808 (2023).
57. Njuki, J. *Integrating gender in agriculture and food systems research projects and programs: A guide for researchers and program officers.* IDRC (2019).
58. Morgan, R., Garrison-Desany, H., Hobbs, A. J. & Wilson, E. Strengthening effectiveness evaluations through gender integration to improve programs for women, newborn, child, and adolescent health. *Glob. Health Action* 15, 2006420 (2022).
59. RADAR. RADAR example gender analysis matrix for coverage, implementation strength and quality of care surveys (2020).
60. Gender and COVID-19 Project. Gender matrix. <https://www.genderandcovid-19.org/wp-content/uploads/2020/09/Gender-Analysis-and-COVID-19-matrix.pdf> (2021).
61. CRCC. Best practices in equity, diversity and inclusion in research practice and design. <https://www.sshrc-crsh.gc.ca/funding-financement/nfrf-fnfr/edi-eng.aspx> (2022).
62. Huyer, S. Is the gender gap narrowing in science and technology? in *UNESCO Science Report* 85–103 UNESCO (2019).
63. Global Health 50/50. *The Global Health 50/50 report 2020: Power, privilege and priorities.* Global Health 50/50 (2020).
64. Schiebinger, L. Gendered innovations: harnessing the creative power of sex and gender analysis to discover new ideas and develop new technologies. *Triple Helix* 1, 9 (2014).
65. Tannenbaum, C., Ellis, R. P., Eyssel, F., Zou, J. & Schiebinger, L. Sex and gender analysis improves science and engineering. *Nature* 575, 137–146 (2019).
66. NSERC. NSERC guide on integrating equity, diversity and inclusion considerations in research. [https://www.nserc-crsng.gc.ca/NSERC-CRSNG/Policies-Politiques/EDI\\_guidance-Conseils\\_EDI\\_eng.asp#a1](https://www.nserc-crsng.gc.ca/NSERC-CRSNG/Policies-Politiques/EDI_guidance-Conseils_EDI_eng.asp#a1) (2022).
67. Ingelbeen, B. *et al.* Antibiotic use from formal and informal healthcare providers in the Democratic Republic of Congo: a population-based study in two health zones. *Clin. Microbiol. Infect.* 28, 1272–1277 (2022).
68. Morison, T. & Lynch, I. 'We can't help you here': The discursive erasure of sexual minorities in South African public sexual and reproductive health services. *Psychol. Sex. Rev.* 7, 1–25 (2016).
69. Cloete, A. & Lynch, I. *Access to gender-affirming HIV, STI and TB services for transgender women in South Africa.* <https://repository.hsrc.ac.za/handle/20.500.11910/19348> (2022).

70. van der Merwe, L. L. A. *et al.* Engaging transgender women in HIV research in South Africa. *BMC Public Health* 23, 990 (2023).
71. UN Women. *Methods for gender data collection and estimation*. [https://data.unwomen.org/sites/default/files/documents/Asia-Pacific-Training-Curriculum/Module5/Module5\\_Syllabus\\_Methods%20for%20data%20collection%20and%20estimation.pdf](https://data.unwomen.org/sites/default/files/documents/Asia-Pacific-Training-Curriculum/Module5/Module5_Syllabus_Methods%20for%20data%20collection%20and%20estimation.pdf) (2020).
72. Colaço, R. & Watson-Grant, S. *A global call to action for gender-inclusive data collection and use*. <http://www.ncbi.nlm.nih.gov/books/NBK589469/> (2021).
73. WHO. *Integrating gender data in health information systems: challenges, opportunities and good practices* (2021).
74. Pham-Duc, P. *et al.* Knowledge, attitudes and practices of livestock and aquaculture producers regarding antimicrobial use and resistance in Vietnam. *PLOS ONE* 14, e0223115 (2019).
75. Njuki, J. *Integrating gender in agriculture and food systems research projects and programs: A guide for researchers and program officers*. (IDRC, 2019).
76. Creswell, J. W. & Poth, C. N. *Qualitative inquiry & research design: choosing among five approaches*. (SAGE, 2018).
77. European Commission. *Gendered Innovations 2: How inclusive analysis contributes to research and innovation. Policy review*. <http://genderedinnovations.stanford.edu/GI%20%20How%20Inclusive%20Analysis%20Contributes%20to%20R&I.pdf> (2020).
78. Chikovore, J. *et al.* TB and HIV stigma compounded by threatened masculinity: Implications for TB health-care seeking in Malawi. *Int. J. Tuberc. Lung Dis.* 21, 26–33 (2017).
79. Acosta, D., Ludgate, N., McKune, S. L. & Russo, S. Who has access to livestock vaccines? Using the social-ecological model and intersectionality frameworks to identify the social barriers to Peste des Petits Ruminants vaccines in Karamoja, Uganda. *Front. Vet. Sci.* 9, 831752 (2022).
80. Heidari, S., Babor, T. F., De Castro, P., Tort, S. & Curno, M. Sex and gender equity in research: rationale for the SAGER guidelines and recommended use. *Res. Integr. Peer Rev.* 1, 2 (2016).
81. Charani, E. *et al.* The use of imagery in global health: an analysis of infectious disease documents and a framework to guide practice. *Lancet Glob. Health* 11, e155–e164 (2023).
82. Pointer, R. *How to write about Africa in 8 steps: An ethical storytelling handbook*. (Africa No Filter, 2021).
83. Bugos, E. *et al.* Practical guidance and ethical considerations for studies using photo-elicitation interviews. *Prev. Chronic. Dis.* 11, E189 (2014).
84. Sauer, J., Baumgartner, J., Frei, N. & Sonderegger, A. Pictorial scales in research and practice: A review. *Eur. Psychol.* 26, 112–130 (2021).
85. Ntshangase, J. S. *Mapping community radio in sub-Saharan Africa*. [https://journalism.co.za/wp-content/uploads/2021/07/Mapping-Community-Radio-in-Sub-Saharan-Africa-Report\\_FINAL-24-06-21.pdf](https://journalism.co.za/wp-content/uploads/2021/07/Mapping-Community-Radio-in-Sub-Saharan-Africa-Report_FINAL-24-06-21.pdf) (2021).
86. Etwire, P. M., Dogbe, W., Martey, E., Owusu, R. & Fearon, J. Innovative agricultural technology dissemination: Finding a new use for motor tricycles. *J. Exp. Agric. Int.* 1288–1304 (2014) doi:10.9734/ajea/2014/9959.
87. Davis, K. *et al.* *What works in rural advisory services? Global good practice notes*. (GFRAS, 2018).
88. Mullinax, M., Hart, J. & Garcia, A. *Using research for gender-transformative change: Principles and practice*. (IDRC, 2018).
89. Prozesky, H. & Beaudry, C. Mobility, Gender and Career Development in Higher Education: Results of a Multi-Country Survey of African Academic Scientists. *Soc. Sci.* 8, 188 (2019).
90. Adams, N., Romero, F. & Everhart, A. *A toolkit for creating radically inclusive grassroots events*. (TPATH, 2023).
91. UNICEF. *Gender equality: Glossary of terms and concepts*. (UNICEF Regional Office for South Asia, 2017).