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Building Resilient Health Systems for a Sustainable and Equitable Future

Policy Analysis of Antimicrobial Resistance in Nepal: Challenges, Gaps, and Recommendations

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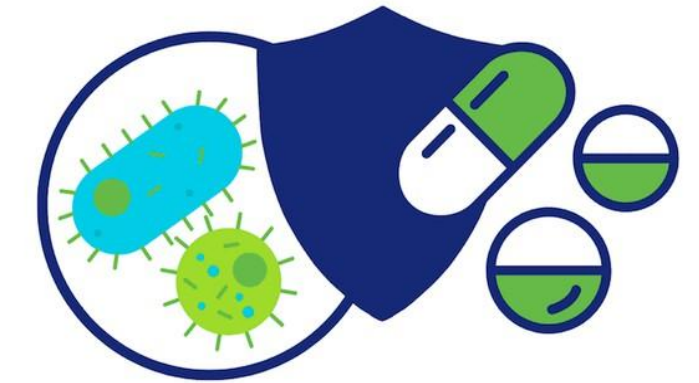
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Outline

- **Background**
- **Research Gaps & Objectives**
- **Methodology**
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- **Acknowledgement**

Background



Antimicrobial Resistance (AMR) occurs when microbes (bacteria, fungi, virus and parasites) no longer respond to the antimicrobial medicines. As a result of drug resistance, antibiotics and other antimicrobial medicines become ineffective, increasing the risk of disease spread, severe illness, disability and death ([WHO 2023](#)).

- AMR, a "silent pandemic," has caused 36 million deaths since 1990, equating to 3 deaths per minute, could lead to 1.9 million deaths annually by 2050, totaling 39 million deaths from 2025 to 2050. ([Naghavi et al. 2024, Lancet](#))
- AMR could shrink the global economy by \$1 trillion by reducing GDP by up to 3.8% and pushing additional 28.3 million into extreme poverty by 2050. ([The World Bank 2016](#))
- In Nepal, there were 6,400 deaths attributable to AMR and 23,200 deaths associated with AMR in 2019. ([Institute for Health Metrics and Evaluation, healthdata.org](#))

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Global burden of bacterial antimicrobial resistance 1990–2021: a systematic analysis with forecasts to 2050

[GBD 2021 Antimicrobial Resistance Collaborators¹](#)

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» Summary

Background

Antimicrobial resistance (AMR) poses an important global health challenge in the 21st century. A previous study has quantified the global and regional burden of AMR for 2019, followed with additional publications that provided more detailed estimates for several WHO regions by country. To date, there have been no studies that produce comprehensive estimates of AMR burden across locations that encompass historical trends and future forecasts.

Research Gap and Objectives

Research Gaps

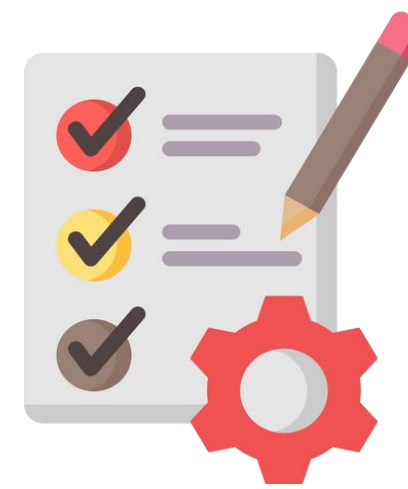
- Weak Implementation of AMR Policies
- Limited One Health Stakeholder Coordination
- Low Community Awareness and Engagement
- Resource Constraints
- Lack of Local Government Ownership
- Critical Gap in Environmental AMR Profiling



Research Objectives

- Review and analyze the existing AMR policies, strategies and action plans through SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis
- Propose actionable recommendations for AMR containment.

Research Methodology



Literature Search

- Policies
- Strategies
- Action Plans
- NGOs/INGOs Reports
- Grey Literatures
- Peer Reviewed Articles (PubMed, MEDLINE, Publons)

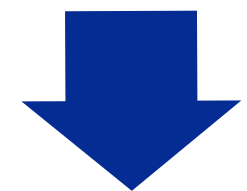
SWOT Matrix Preparation

- Strengths
- Weaknesses
- Opportunities
- Threats

Independent SWOT Analysis



- Conducted by 3 Researchers independently



Recommendations

Key points

Report Generation

Findings - compilation for each policy

PI Review/Analysis

- Extracting common points
- Prioritizing key findings
- Scientific merit

Findings

The Drugs Act 1978

National Drug Policy 1995

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- Legal Framework for Drug Regulation (Section 5)
- Provision of Quality Control, Prescription Control Measure and Drug Advertisement

- National Antibiotic Control Committee (NACC) formed (Section 4.3.3.d).
- Encourages the establishment of a proper recording system for antibiotic (Section 4.3.3.b).

W

- Gaps in AMR-Specific Provisions Weak Regulation in Veterinary Sector

- Lacks strong public awareness programs about the dangers of antibiotic misuse (Section 4.3.2.c).
- Lacks Environmental impact of antimicrobial residues in water and soil

O

- Section 40 allows the Government of Nepal to frame new rules
- Section 5 and Section 6 mention drug research labs, which could be expanded

- Establishment of National Antibiotic Therapeutics Advisory Committee (NATAC) to provide expert guidance (Section 4.3.3.e).
- The policy allows room for further strengthening AMR control measures through amendments to existing drug laws (Section 3.k).

T

- Section 17(4) allows some drugs to be sold based on the seller's "experience," potentially contributing to antibiotic misuse.
- Section 26 allows the GoN to fix drug prices.

- Rising Cases of Drug-Resistant Infections The threat of Nepal importing drug-resistant
- infections due to increased globalization and travel (Section 4.2.f).

Findings



National Health Policy 2019

One Health Strategy 2076

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- Recognized as a public health problem (Section 6.24)
- Mention about the multi-sectoral collaboration for healthcare

- Integrates human, animal, and environmental health, ensuring comprehensive OH AMR containment.
- Engages health, agriculture, and environmental sectors for coordinated action.

W

- Has not mention detailed about the AMR

- Requires high-level governance across diverse sectors, leading to bureaucratic challenges.
- Human health often dominates, while veterinary and environmental health receive less attention.

O

- The policy allows for further strengthening AMR control measures by developing other strategies

- Expanding One Health labs and data-sharing platforms can improve resistance tracking.
- Encourages evidence-based policymaking and innovation in antimicrobial alternatives.

T

- The absence of stewardship programs could lead to continued inappropriate antimicrobial usage, exacerbating resistance issues.

- Limited government budgets and policy inconsistencies slow down implementation.
- Environmental disruptions increase AMR spread, complicating One Health efforts.

The National Antimicrobial Treatment Guidelines 2023

Nepal AMR Integration Report (2018)

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- Emphasis on Antimicrobial Stewardship (AMS) Programs
- Integration of WHO AWaRe Classification
- Recognition of Multidrug-Resistant Organisms

- The establishment of a National Multi-Sectoral Steering Committee involving key ministries
- The integration of AMR surveillance within existing disease control programs

W

- Lack of Veterinary and Environmental AMR
- Insufficient Guidelines on AMR-Related Waste Management
- Gaps in Guidelines for Emerging Infections and Novel Antimicrobials

- While a large portion of Nepal's healthcare is delivered through the private sector, there is no structured involvement of private healthcare
- duplication of reports, unclear policy roles among federal, provincial, and municipal governments

O

- Enhancing Public Awareness and Pharmacist Training
- Adoption of Digital Tools for Prescription Monitoring

- Nepal can strengthen OH collaboration by integrating environmental monitoring and AMR tracking in wastewater and hospital waste management

T

- Weak Law Enforcement and Policy Implementation
- Cross-Border Spread of AMR Pathogens

- Limited public knowledge about the dangers of antibiotic misuse, self-medication.

National AMR Containment Action Plan 2016

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- The plan includes human health, animal health, agriculture, and environment, promoting a collaborative approach among ministries, agencies, and stakeholders. (Section II)
- The National Public Health Laboratory (NPHL) acts as the focal point for AMR surveillance and outbreak response. Section II "Laboratory-based AMR Surveillance
- Calls for mandatory IPC committees in hospitals to ensure hand hygiene, sanitation, and biosafety. Section III : "Infection Prevention and Control" (p.17), AMR Awareness Week (November)

W

- Limited focus on Veterinary & Agricultural AMR Surveillance
- Lack of Financial and Human Resources, No Defined AMR-Specific Waste Management

O

- Expanding AMR surveillance to the veterinary and environmental sectors will provide a more comprehensive picture of resistance patterns.
- Enhancing Public-Private Partnerships Section: "Way Forward" (p.20)
- Encourages academic institutions (universities and think tanks) to conduct AMR research will strengthen evidence-based policy development.

T

- Nepal has seen a dramatic rise in resistance to key antibiotics, including 85% resistance to Ciprofloxacin in Salmonella and MRSA infections rising by 80%.
- Unregulated Cross-Border Antibiotic Trade and weak Political Commitment & Bureaucratic Delays Section: "Way Forward" (p.20)

National Action Plan for AMR 2080/81 – 2084/85 (2024 – 2029)

S	- Governance structures include a High-Level Multi-Sectoral Steering Committee, a National Technical Working Committee (NTWC), and Technical Working Committees (TWCs). - Sets five strategic priorities: Awareness and education on AMR, Strengthening AMR surveillance and research, Infection prevention and control (IPC), Optimizing antimicrobial use in humans, animals, and food, Promoting investment in AMR activities, research, and innovations - Emphasis on Infection Prevention and Control (IPC) Section 1.2.4
W	- Veterinary/agriculture antibiotic uses - poorly regulated, contributing to resistance in livestock and food products. - Financial and Human Resource Constraints - Limited training programs for healthcare workers, pharmacists, veterinarians, and farmers on responsible antimicrobial use
O	- Expanding AMR surveillance in animal health, agriculture, and the environment will improve data accuracy. - Implementing electronic prescription systems (e-prescriptions) in hospitals and pharmacies can track antibiotic prescriptions and reduce misuse.
T	- Lack of new antibiotics and alternative treatments could worsen the AMR crisis. - Despite strong policies, political instability and bureaucratic delays may slow implementation. - AMR increases hospitalization costs, longer treatment durations, and higher mortality rates, straining Nepal's healthcare system and economy.

Recommendations to Contain AMR



Revise Legislation:

- Revise Drugs Act 1978
- National Drug Policy 1995
- Incorporate antimicrobial (bio-hazard) waste management



Implement Effectively:

- Adapt NAP-AMR 2024 – 2029 in Palikas
- Roll out National Antibiotic Treatment Guidelines 2023 across public and private sectors in OH approach



Expand Surveillance in OH interface:

- Strengthen AMR surveillance
- Environment AMR surveillance
- Lab. capacity building
- Genomic level surveillance
- Routine data sharing
- OH Data bank/center



Recommendations Continued...



- **Strengthen Coordination:**
Enhance multisectoral *collaboration* under the OH Strategy 2019



- **Public Awareness:**
 - Evidence-based awareness,
 - Community engagements and integrating AMR education into school curricula



Mobilize Resources:

- Secure funding for NAP-AMR 2024–2029, emphasizing capacity building, and research and development



Conclusion



- Urgent local government level (753 palikas) adaption of existing AMR policies (NAP-AMR)
- Effective implementation of policies and guidelines in OH interfaces
- Enforcing prescription-only antimicrobial dispensing, updating outdated drug regulations, community level education & awareness and integrating AMR education into school curricula
- Prioritizing a multisector collaboration within the OH framework, strong political will and effective governance, is imperative for translating policy into action.

Take Home Message

While policies have been formulated, their effective implementation requires adequate resources. Raising awareness at the local level is crucial, alongside prioritizing research and development. Cross-border infections must be addressed, and biohazard waste management should be a key priority.

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