World Organisation for Animal Health

Regional Workshop on Antimicrobial Resistance (AMR) in Aquaculture - English-speaking Africa

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Antimicrobial Resistance Surveillance in Aquatic Animals

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01 Introduction to AMR in Aquatic Environments

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The Importance of AMR Surveillance

Understanding AMR Spread

Monitoring bacterial pathogens in aquatic species is crucial for

- **mitigating the spread of antimicrobial resistance (AMR) in aquaculture**
- **and the broader aquatic environment;**

it helps understand transmission mechanisms.

The "One Health" Approach

Recognizing the interconnectedness of human, animal, and environmental health,

Recognition that AMR can impact human health and the broader ecosystem.

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Objectives of the Presentation

Defining Key Aspects

We aim to discuss the key components of

- effective AMR surveillance in aquatic environments,
- covering monitoring,
- data analysis, and implications.

Highlighting the Urgency

- We aim to illustrate the urgency of addressing AMR in aquatic animals
- to protect public health
- and ensure sustainable aquaculture practices.

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02 Key Components of AMR Surveillance

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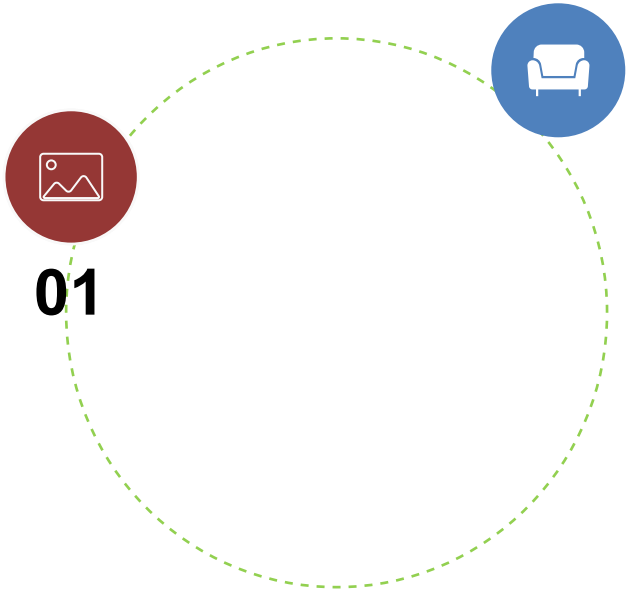
Monitoring Bacterial Pathogens

Identifying Critical Bacteria

- Focusing on identifying antimicrobial-resistant bacteria in diseased or infected aquatic species,
- both farmed and wild, is essential;
- this provides critical data.



01

02

Methods for Detection

Employing advanced molecular techniques
such as
PCR and whole-genome sequencing to detect
AMR genes and track their evolution in bacterial populations.

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Assessing Antimicrobial Use

01

Surveys and Data Collection

Surveys antimicrobial usage in aquaculture to understand patterns and identify areas where responsible use practices need to be strengthened; includes data collection.

02

Analyzing Usage Patterns

Analyzing collected data to pinpoint inappropriate usage and informing targeted interventions to optimize antimicrobial use in aquaculture practices.

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Identifying AMR Hotspots

Areas of High Resistance

Focuses on identifying and characterizing antimicrobial-resistant bacteria in diseased or infected aquatic species, both farmed and wild.

Understanding Transfer Mechanisms

- Analyzing surveillance data to pinpoint locations or situations where AMR is more likely to emerge and spread;
- critical for understanding the dynamics of AMR.

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03 The "One Health" Approach

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Interconnectedness of Health

Human, Animal, and Environment

- Recognizes the interconnectedness of human, animal, and environmental health,
- acknowledging that AMR in aquatic animals can impact human health and the broader ecosystem.

Shared Resistance Genes

- Emphasizing the transmission of resistance genes between aquatic bacteria, humans, and terrestrial animals;
- this highlights the holistic nature of AMR.

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04 The Importance of Surveillance

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Informing Policy

01

Evidence-Based Policies

Surveillance data provides evidence to support the development and implementation of policies aimed at reducing AMR, such as responsible antimicrobial use guidelines.

02

Impact on Public Health

Highlighting how data influences policy decisions, such as restricting certain antimicrobials or enforcing stricter biosecurity measures in aquaculture facilities.

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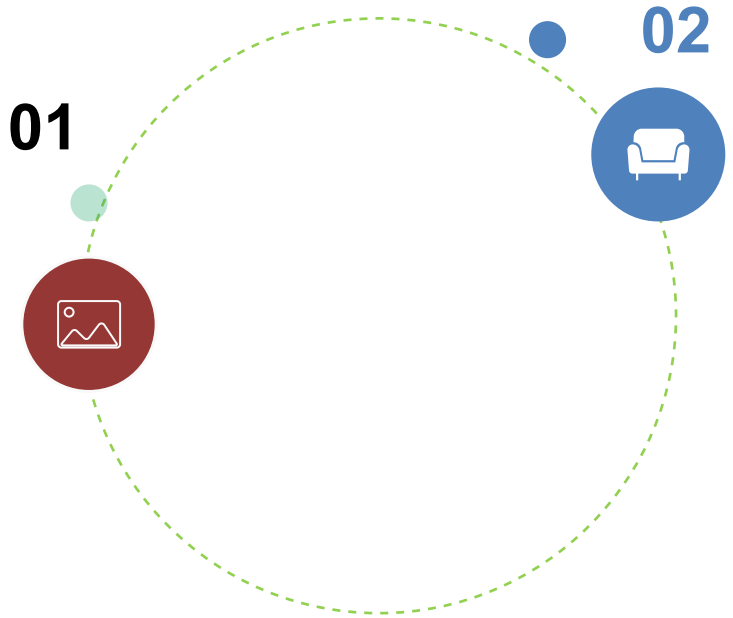
Public Health Protection

Preventing AMR Transmission

Helps to prevent the spread of AMR pathogens from aquatic environments to humans through food consumption or other pathways.



Food Safety Measures

Focusing on measures such as improved hygiene, cooking practices, and seafood processing to prevent transmission of AMR pathogens to humans.

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05 International Initiatives

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FAO's InFARM System

Global Data Collection

(FAO) International Antimicrobial Resistance Monitoring System (InFARM) is a global platform for collecting, analyzing, and visualizing AMR data from aquaculture and other sectors.

Supporting Surveillance

Emphasizing how InFARM facilitates global data sharing, standardization of methods, and collaboration to combat AMR on a worldwide scale.

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WOAH's ANIMUSE Database

01

Data Reporting

The World Organisation for Animal Health (WOAH) has upgraded its ANIMUSE database to facilitate data reporting, analysis, and visualization of AMR data from animal health sectors, including aquaculture.

02

Data Analysis and Visualization

Detailing the features of ANIMUSE that support data analysis, visualization, and interpretation to improve reporting and decision-making capabilities.

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Trade Facilitation

Meeting International Obligations

Enables countries to meet international obligations and facilitate safe trade of aquatic animals and products by demonstrating control over AMR.

Ensuring Safe Trade

- Stressing the dual benefits of trade facilitation
- and assurance of safe international trade;
- this also promotes economic stability

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06 Challenges and Considerations

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Standardization of Methods

Data Comparability

A lack of standardized methods for AMR surveillance in aquaculture can hinder data comparability and analysis across different regions.

Need for Uniform Protocols

Detailing the need for uniform protocols for data collection, analysis, and reporting to facilitate reliable comparisons of AMR data across regions.

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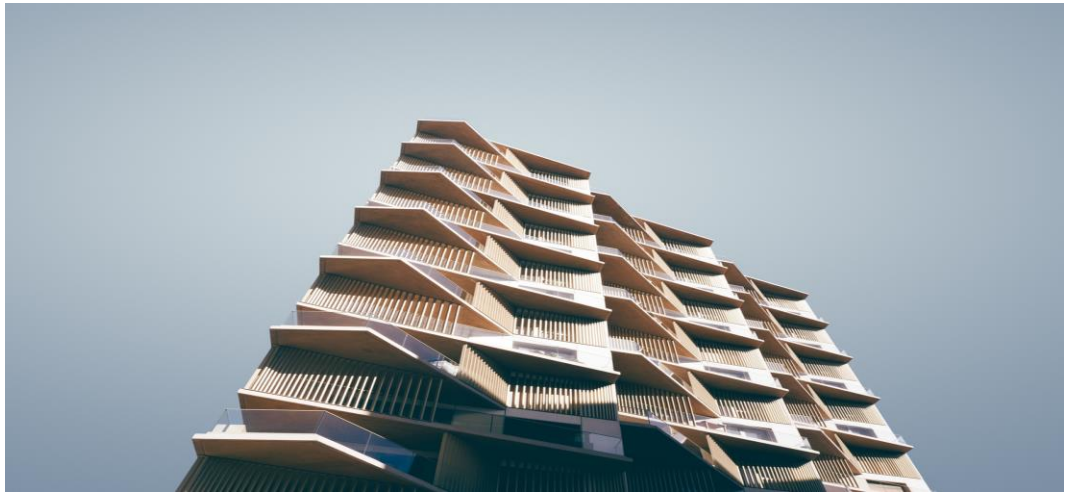
Resource Limitations



Effective Resource Allocation

Promoting effective resource allocation to maximize the impact of limited resources on AMR surveillance efforts, enhancing efficiency and outcome.

Establishing Surveillance Systems

Many countries face resource constraints in establishing and maintaining comprehensive AMR surveillance systems.

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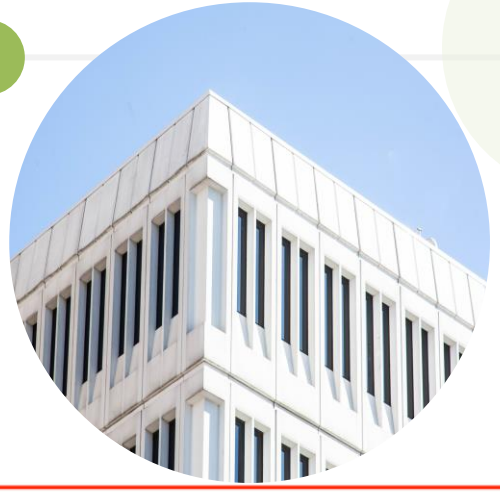
Integration with Other Sectors

Strengthening the "One Health" Approach

Strengthening the "One Health" approach by integrating surveillance data from human health, animal health, and environmental health is essential.



Cross-Sector Collaboration

Emphasizing the benefits of cross-sector collaboration to enhance the effectiveness of AMR surveillance and mitigation efforts, creating synergy.

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07 Future Directions and Conclusion

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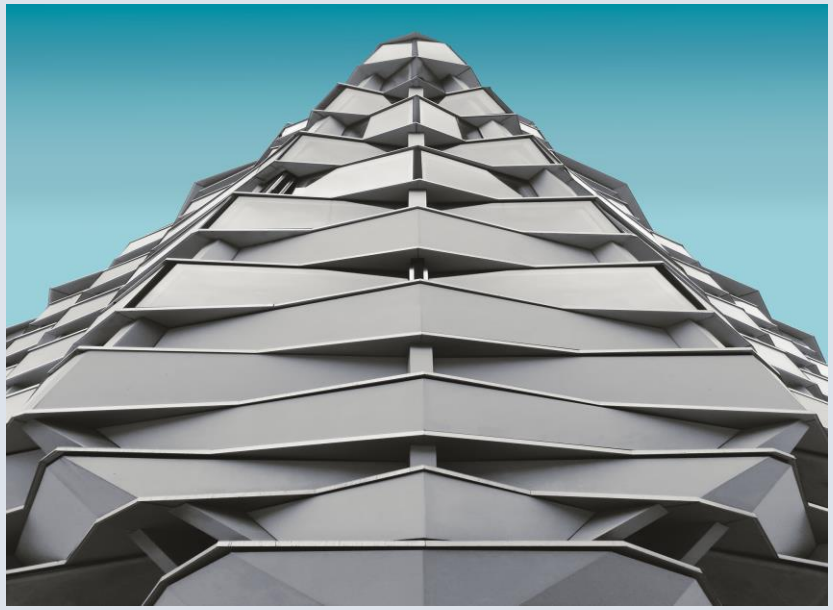
Enhancing Data Collection



01 Investing in Advanced Technologies

Investing in advanced technologies for rapid detection of AMR genes and improved data collection methods, creating new opportunities.

02 Expanding Surveillance Networks

Detailing the importance of expanding surveillance networks to cover a wider range of aquatic environments and species, providing a more comprehensive overview.

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Promoting Responsible Antimicrobial Use

Education and Training

Promoting education and training programs for

- aquaculture farmers
- and veterinarians

on responsible antimicrobial usage,.

Incentivizing Best Practices

- Highlighting the potential of incentives,
- such as certifications and subsidies,
- to encourage adoption of best practices in antimicrobial use.

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Conclusion: The Path Forward

01

Collaborative Efforts

Underlining the urgent need for concerted, collaborative efforts to combat AMR in aquatic animals, emphasizing shared responsibility.

Ensuring Sustainable Aquaculture

02

Concluding with a call to action to ensure the sustainability of aquaculture and protect public health through effective AMR surveillance and management.

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