



# **The Fleming Fund Country Grant Programme**

Resource Handbook: Antimicrobial Resistance, Antimicrobial Use, and Antimicrobial Stewardship

3<sup>rd</sup> edition

# Resource Handbook: Antimicrobial Resistance, Antimicrobial Use, and Antimicrobial Stewardship

3<sup>rd</sup> edition, January 2021

This resource handbook was compiled by Mott MacDonald, the Management Agent for the UK Department of Health and Social Care's Fleming Fund Country Grant Programme. This resource contains a list of links to open access guidance documents and manuals relevant to Antimicrobial resistance (AMR) and Antimicrobial Use (AMU) surveillance, and Antimicrobial Stewardship (AMS), with a specific focus on resource-limited settings. The handbook is organized in sections covering strategic documents from the Tripartite organisations, the World Bank and other key international stakeholders, surveillance in human health, animal health, the foodchain and the environment, infection prevention and control, biosafety and biosecurity guidance and laboratory resources relevant for AMR surveillance.

This handbook is not exhaustive or country specific and should be considered a living document which will be updated as and when the resources are revised or when new guidance comes online. The handbook can be shared with any relevant stakeholder, but it is advised that anyone sharing the document downloads the latest version from the Fleming Fund website. Stakeholders should also consult any relevant national or local guidance document developed by government ministries.

We have included guidance from reputable international organizations with responsibility for ensuring standards in clinical microbiology, AMR and AMU surveillance, laboratory standards or antimicrobial stewardship. We have, wherever possible, provided specific bacteriology / AMR-relevant documents rather than generic guidelines, unless these do not yet exist (e.g. for biorepository management). We have not included documents from individual countries or those which have not been published for international use. Documents are listed by guidance type, and by year of publication (most recent first).

The documents linked to in the handbook do not necessarily express the opinion of the Fleming Fund or its Management Agent, and the Fleming Fund is not responsible for the accuracy of information contained within the documents.

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Additions and modification from the previous version:

Version	Changes
3.0	<p><b>Additions:</b></p> <p>Section II: AMR, AMU and AMC surveillance in Human Health</p> <ul style="list-style-type: none"> <li>• GLASS guide for national surveillance systems for monitoring antimicrobial consumption in hospitals</li> </ul> <p>Section III: AMR and AMU surveillance in Animal Health and the Food Chain</p> <ul style="list-style-type: none"> <li>• Recommendations on prudent use of antimicrobials in aquaculture</li> <li>• Guidance for completing the OIE template for the collection of data on antimicrobial agents intended for use in animals</li> </ul> <p>Section IV: AMR surveillance in Agriculture, Aquaculture and the Environment</p> <ul style="list-style-type: none"> <li>• The performance of AST programmes relevant to aquaculture and aquaculture products</li> </ul> <p>Section VI: Infection Prevention and Control and WASH</p> <ul style="list-style-type: none"> <li>• Technical Brief on water, sanitation, hygiene and wastewater management to prevent infections and reduce the spread of AMR</li> </ul> <p>Section VII. Antimicrobial susceptibility testing standards and protocols</p> <ul style="list-style-type: none"> <li>• EUCAST breakpoint table version 11 January 2021</li> </ul> <p><b>Modifications</b></p> <p>Section VI: Infection Prevention and Control and WASH</p> <ul style="list-style-type: none"> <li>• “Water and Sanitation for Health Facility Improvement Tool (WASH FIT)” replacing “Water, Sanitation, and Hygiene in Health-Care Facilities. Practical Steps to achieve universal access to Quality Care”.</li> </ul> <p>Section VIII: Biosafety and Biosecurity</p> <ul style="list-style-type: none"> <li>• WHO Biosafety Manual 4<sup>th</sup> edition 2021 replacing the 3<sup>rd</sup> Manual (2004)</li> </ul>
3.1	<p><b>Updated versions</b></p> <p>Section III: AMR and AMU surveillance in Animal Health and the Food Chain</p> <ul style="list-style-type: none"> <li>• OIE List of Antimicrobial Agents of Veterinary Importance – 2018 updated list</li> </ul> <p>Section VII. Antimicrobial susceptibility testing standards and protocols</p> <ul style="list-style-type: none"> <li>• EUCAST Antimicrobial susceptibility testing disk diffusion method – version 9.0 – 2021</li> <li>• EUCAST Media preparation for disk diffusion testing and for determination of MIC values by the broth microdilution method – version 6.0 – 2019</li> </ul>

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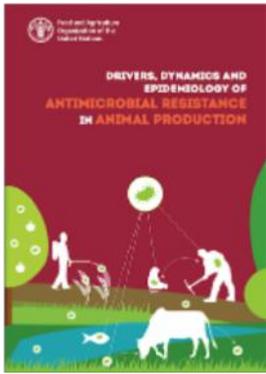
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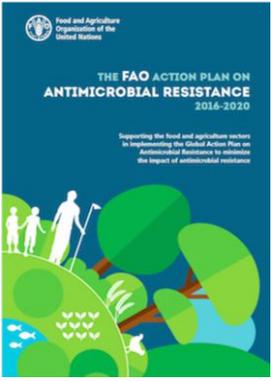
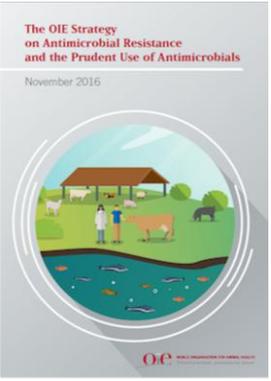
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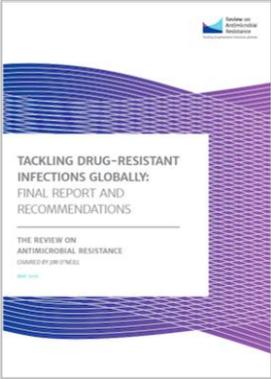
## Abbreviations

<b>AGISAR</b>	WHO Advisory Group on Integrated Surveillance of Antimicrobial Resistance
<b>AM</b>	Antimicrobial
<b>AMR</b>	Antimicrobial Resistance
<b>AMU</b>	Antimicrobial Usage
<b>AMS</b>	Antimicrobial Stewardship
<b>AMC</b>	Antimicrobial Consumption
<b>ASP</b>	Antibiotic Stewardship Program
<b>CDC</b>	US Centers for Disease Control and Prevention
<b>CIA</b>	Critically Important Antimicrobials (WHO)
<b>CLSI</b>	Clinical and Laboratory Standards Institute
<b>DHSC</b>	UK Department of Health and Social Care
<b>EMA</b>	European Medicine Agency
<b>EUCAST</b>	European Committee on Antimicrobial Susceptibility Testing
<b>ESCMID</b>	European Society of Clinical Microbiology and Infectious Diseases
<b>FAO</b>	Food and Agriculture Organization
<b>GLASS</b>	Global AMR Surveillance System
<b>HMIS</b>	Health Management Information System
<b>IACG</b>	Interagency Coordination Group on Antimicrobial Resistance.
<b>IARC</b>	International Agency for Research on Cancer
<b>LMICs</b>	Low- and Middle-Income Countries
<b>LSHTM</b>	The London School of Hygiene & Tropical Medicine
<b>OIE</b>	Office International des Épizooties (also known as the Organisation for Animal Health)
<b>PPE</b>	Personal Protective equipment
<b>SIN</b>	UK Science and Innovation Network
<b>UNICEF</b>	United Nations Children’s Fund
<b>WASH</b>	Water, sanitation and hygiene
<b>WHO</b>	World Health Organization

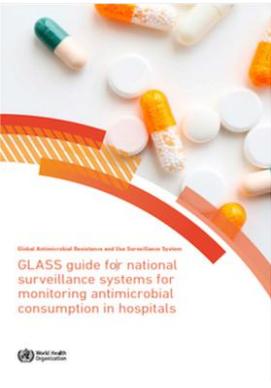
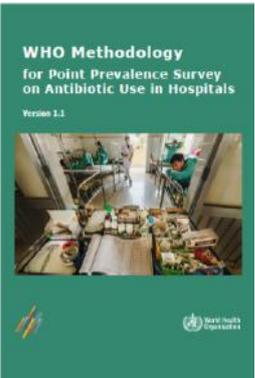
## I. Strategic Documents

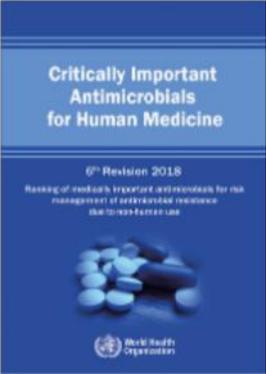
Document	Year	Description of contents and links
<p>No time to wait: securing the future from drug-resistant infections</p> <p>Author: IACG</p> 	2019	<p>Developed by the Interagency Coordination Group on Antimicrobial Resistance. Describes recommendations for urgent actions to address the challenges of AMR and AMU:</p> <ol style="list-style-type: none"> <li>1. Accelerate progress in countries</li> <li>2. Innovate to secure the future</li> <li>3. Collaborate for more effective action</li> <li>4. Invest for a sustainable response</li> <li>5. Strengthen accountability and global governance</li> </ol> <p><a href="#">Link to the IACG website</a></p> <p><a href="#">Download pdf in English</a></p> <p><a href="#">Download pdf in French</a></p>
<p>Global Action Plan on Antimicrobial Resistance</p> <p>Author: WHO</p> 	2018	<p>Describes the five objectives of the Global Action Plan on Antimicrobial Resistance:</p> <ol style="list-style-type: none"> <li>1. To improve awareness and understanding of AMR through effective communication, education and training;</li> <li>2. To strengthen the knowledge and evidence base through surveillance and research;</li> <li>3. To reduce the incidence of infection through effective sanitation, hygiene and infection prevention measures;</li> <li>4. To optimize the use of antimicrobial medicines in human and animal health; and</li> <li>5. To develop the economic case for sustainable investment that takes account of the needs of all countries and to increase investment in new medicines, diagnostic tools, vaccines and other interventions.</li> </ol> <p><a href="#">Download pdf in English</a></p> <p><a href="#">Download pdf in French</a></p>
<p>Drivers, Dynamics and Epidemiology of AMR in Animal Production</p> <p>Author: FAO</p> 	2017	<p>Technical paper dealing with the epidemiology AMR emergence as a consequence of AMU in animal production, and the risk of its spread via food distribution and the environment.</p> <p><a href="#">Download pdf in English</a></p>

Document	Year	Description of contents and links
<p>The FAO Action Plan on Antimicrobial Resistance</p> <p>Author: FAO</p> 	<p>2017</p>	<p>Addresses four major Focus Areas:</p> <ul style="list-style-type: none"> <li>• Improving awareness on AMR and related threats;</li> <li>• Developing capacity for surveillance and monitoring of AMR and AMU in food and agriculture;</li> <li>• Strengthening governance related to AMU and AMR in food and agriculture;</li> <li>• Promoting good practices and the prudent use of antimicrobials.</li> </ul> <p><a href="#">Download pdf in English</a></p> <p><a href="#">Download pdf in French</a></p>
<p>Drug Resistant Infections: A Threat to Our Economic Future</p> <p>Author: World Bank</p> 	<p>2017</p>	<p>Examines the economic and development consequences of AMR. Uses World Bank Group economic simulation tools to quantify the impact of AMR on the global economy over the next 30 years. Highlights actions low- and middle-income countries and their development partners can take to counter AMR, and estimates the investment required.</p> <p><a href="#">Download pdf in English</a></p>
<p>The OIE Strategy on Antimicrobial Resistance and the Prudent Use of Antimicrobials</p> <p>Author: OIE</p> 	<p>2016</p>	<p>Describes the OIE Strategy to supports the objectives established in the Global Action Plan through four main objectives:</p> <ul style="list-style-type: none"> <li>• Improve awareness and understanding</li> <li>• Strengthen knowledge through surveillance and research</li> <li>• Support good governance and capacity building</li> <li>• Encourage implementation of international standards</li> </ul> <p><a href="#">Download pdf in English</a></p>

Document	Year	Description of contents and links
<p>Tackling Drug-Resistant Infections Globally: Final report and recommendations</p> <p>Authors: Wellcome Trust &amp; UK Department of Health and Social Care</p> 	<p>2017</p>	<p>Final report of the UK Government Independent Review on Antimicrobial Resistance. The review was chaired by macroeconomist Jim O’Neill and examines the growing threat of AMR from an economic perspective.</p> <p>A further eight thematic papers have also been published, addressing different aspects of AMR, available at <a href="https://amr-review.org">https://amr-review.org</a></p> <p><a href="#">Download pdf in English</a></p>

## Section II. AMR and AMU surveillance in Human Health

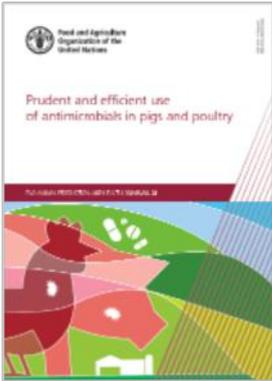
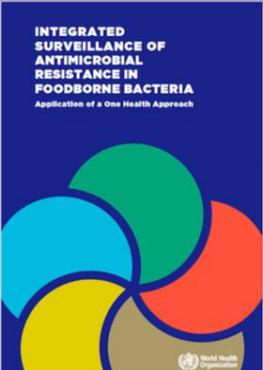
Document	Year	Description of contents and links
<p>GLASS guide for national surveillance systems for monitoring antimicrobial consumption in hospitals</p> <p>Author: WHO</p> 	<p>2020</p>	<p>Provides guidance for estimating the volume and pattern of antimicrobial consumption in hospitals</p> <p><a href="#">Download pdf in English</a></p>
<p>WHO Methodology for Point Prevalence Survey on Antibiotic Use in Hospitals</p> <p>Author: WHO</p> 	<p>2019</p>	<p>Provides a standardized methodology for measuring antibiotic use in Hospital. Can be used for single-centre or multi-centre surveys.</p> <p>Topics covered in the guideline:</p> <ul style="list-style-type: none"> <li>• Inclusion criteria</li> <li>• Data collection structure analysis and dissemination</li> <li>• Ethical review and data privacy</li> <li>• Definition of the variables (core and optional)</li> </ul> <p><a href="#">Download pdf in English</a></p>
<p>AWaRe database</p> <p>Author: WHO</p> 	<p>2019</p>	<p>Outlines the AWaRe classification (Access, Watch, Reserve) for antimicrobials, aimed at helping prescribers, pharmacists, and policy makers address the AMR challenge.</p> <p><a href="#">Download the database</a></p> <p><a href="#">Access to the web portal</a></p>

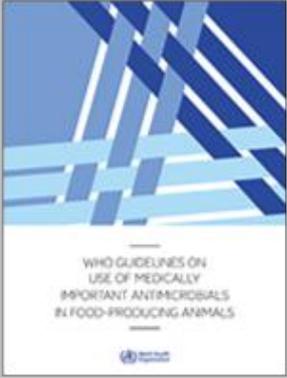
Document	Year	Description of contents and links
<p>WHO list of Critically Important Antimicrobials for Human Medicine (WHO CIA list)</p> <p>Author: WHO</p> 	2017	<p>Prioritisation list of antimicrobials used for human medicine which should be considered when developing surveillance programmes.</p> <p><a href="#">Download pdf in English</a></p>
<p>GLASS Diagnostic stewardship. A guide to implementation in antimicrobial resistance surveillance sites</p> <p>Author: WHO</p> 	2016	<p>Provides guidance for</p> <ol style="list-style-type: none"> <li>1. Clinicians, laboratory staff and other relevant healthcare workers, describing the diagnostic pathway and steps to be taken to ensure correct specimen management</li> <li>2. Healthcare managers, administrators, and policy makers, addressing the organizational and structural elements that must be in place to facilitate successful diagnostic stewardship in health-care facilities and surveillance sites</li> </ol> <p><a href="#">Download pdf in English</a></p> <p><a href="#">Download pdf in French</a></p>
<p>GLASS: A guide to planning, implementation, and monitoring and evaluation</p> <p>Author: WHO</p> 	2016	<p>Complements the GLASS Manual for Early Implementation (see below). Primarily intended to support capacity building in countries with limited resources, particularly in the planning phase of setting up a national AMR surveillance in the human health sector.</p> <p><a href="#">Download pdf in English</a></p>

Document	Year	Description of contents and links
<p>GLASS Manual for Early Implementation</p> <p>Author: WHO</p> 	<p>2015</p>	<p>Provides guidance for country participation in the Global Antimicrobial Surveillance System for human health. Includes guidance on the collection, compilation and sharing of data; development of national surveillance systems; and provides indicators for measuring implementation of a national AMR surveillance programme.</p> <p><a href="#">Download pdf in English</a></p>

## Section III. AMR and AMU surveillance in Animal Health and the Food Chain

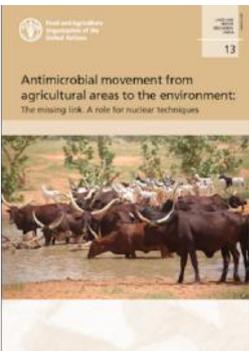
Document	Year	Description of contents and links
<p>Guidance for completing the OIE template for the collection of data on antimicrobial agents intended for use in animals</p> <p>Author: OIE</p> 	<p>2020</p>	<p>Provides guidance for submitting data to the OIE Global database on antimicrobial agents intended for use in animals</p> <p>The template and the associated guidances can be downloaded from the OIE website</p> <p><a href="#">OIE template</a></p> <p><a href="#">Guidance for completing the OIE template</a></p> <p><a href="#">Annex to assist in calculations</a></p>
<p>Categorization of antibiotics in the European Union</p> <p>Author: EMA Europe</p> 	<p>2019</p>	<p>A revision of 2014 classification of antimicrobials used in veterinary medicine by the Antimicrobial Advice Expert Group (AMEG) of the European Medicine Agency. AMEG has defined four categories for each antibiotic (sub)class: category A (“Avoid”); category B (“Restrict”), category C (Caution”) and category D (“Prudence”).</p> <p>An infographic summarizing the classification is available here: <a href="#">Infographic</a></p> <p><a href="#">Download pdf in English</a></p>
<p>Monitoring and surveillance of antimicrobial resistance in bacteria from healthy food animals intended for consumption</p> <p>Author: FAO Asia-Pacific</p> 	<p>2019</p>	<p>Guidance for the Asia Pacific Region to develop country plans for surveillance of food-borne bacteria from healthy animals, including recommendations and methodologies for sampling, priority bacteria for surveillance, laboratory procedures for isolation and antimicrobial susceptibility testing, and data management and reporting</p> <p><a href="#">Download pdf in English</a></p>

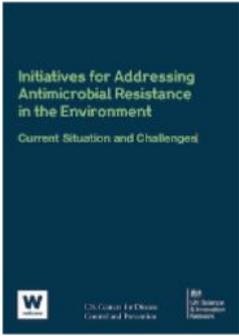
Document	Year	Description of contents and links
<p>Recommendations on prudent use of antimicrobials in aquaculture</p> <p>Author: FAO</p> 	2019	<p>Technical Guidelines on the Prudent and Responsible Use of Veterinary Medicines in Aquaculture, designed to support the OIE Code and international guidelines.</p> <p>Key recommendations include appropriate government regulation, promotion of awareness and best practices, collaboration and engagement of public and private sector stakeholders, good governance, research, and AMR and AMU surveillance. The document also includes guidance on the use of veterinary medicines in aquaculture.</p> <p><a href="#">Download pdf in English</a></p>
<p>Prudent and efficient use of antimicrobials in pigs and poultry</p> <p>Author: FAO</p> 	2019	<p>General guidance on how to combine prudent use of antimicrobials with preventive and biosecurity measures in pigs, pig herds, poultry and poultry farms</p> <p><a href="#">Download pdf in English</a></p>
<p>Integrated Surveillance of Antimicrobial Resistance in Foodborne Bacteria – Application of a One Health Approach</p> <p>Author: WHO AGISAR</p> 	2017	<p>Aims to assist WHO member states and stakeholders in the establishment and development of programmes for integrated surveillance of antimicrobial resistance in foodborne bacteria. This expands on traditional public health surveillance to include multiple elements of the food chain, and to include antimicrobial use data, to better understand the sources of infection and transmission routes.</p> <p><a href="#">Download pdf in English</a></p>

Document	Year	Description of contents and links
<p>WHO Guidelines on Use of Medically Important Antimicrobials in Food-Producing Animals</p> <p>Author: WHO</p> 	<p>2017</p>	<p>Evidence based recommendations and best practice statements on use of medically important antimicrobials in food-producing animals, based on the WHO CIA list.</p> <p><a href="#">Download pdf in English</a></p>
<p>OIE List of Antimicrobial Agents of Veterinary Importance</p> <p>Author: OIE</p> 	<p>2018</p>	<p>Classification of antimicrobial agents of veterinary importance, which should be considered when designing surveillance programmes.</p> <p><a href="#">Download pdf in English</a></p>
<p>OIE Terrestrial AH Code – 6.8. Harmonisation of National AMR Surveillance and Monitoring Programmes</p> <p>Author: OIE</p> 	<p>2013 revised 2018</p>	<p>Provides criteria for the development of national AMR surveillance and monitoring programmes, and the harmonisation of existing national programmes in food-producing animals and products of animal origin intended for human consumption.</p> <p><a href="#">Download pdf in English</a></p>

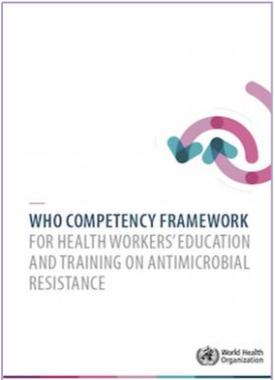
Document	Year	Description of contents and links
<p>OIE Terrestrial AH Code – 6.9. Monitoring of the Quantities and Usage Patterns of Antimicrobial Agents in Food Producing Animals</p> <p>Author: OIE</p> 	<p>2013 rev- ised 2018</p>	<p>Describes an approach to the monitoring of the quantities of antimicrobial agents used in food-producing animals.</p> <p><a href="#">Download pdf in English</a></p>
<p>OIE Aquatic AH Code – 6.3. Monitoring of the Quantities and Usage Patterns of Antimicrobial Agents in Aquatic Animals</p> <p>Author: OIE</p> 	<p>2012</p>	<p>Describes approaches to the monitoring of quantities of antimicrobial agents used in aquatic animals, including species reared for food and ornamental purposes.</p> <p><a href="#">Download pdf in English</a></p>
<p>OIE Aquatic AH Code – 6.4. Development and Harmonization of National AMR Surveillance and Monitoring Programmes for Aquatic Animals</p> <p>Author: OIE</p> 	<p>2012</p>	<p>Provides criteria relevant to aquatic animals and aquatic animal products intended for human consumption for:</p> <ol style="list-style-type: none"> <li>1. the development of national antimicrobial resistance surveillance and monitoring programmes and</li> <li>2. the harmonisation of existing national antimicrobial resistance surveillance and monitoring programmes.</li> </ol> <p><a href="#">Download pdf in English</a></p>

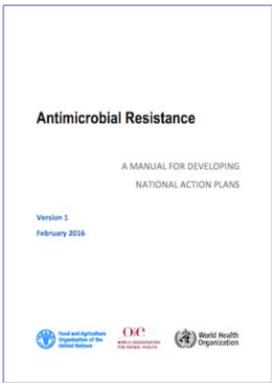
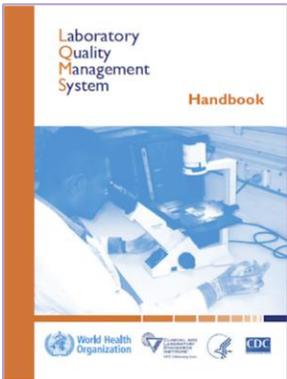
## Section IV. AMR surveillance in Agriculture, Aquaculture and the Environment

Document	Year	Description of contents and links
<p>Foodborne Antimicrobial Resistance: Role of the Environment, Crops and Biocides</p> <p>Author: Joint expert meeting FAO WHO &amp; OIE</p> 	2019	<p>Provides general view on approaches to address AMR surveillance in plant production and aquaculture environments.</p> <p><a href="#">Download pdf in English</a></p>
<p>Developed Antimicrobial movement from agricultural areas to the environment: the missing link. A role for nuclear techniques</p> <p>Author: FAO</p> 	2019	<p>Technical paper reviewing existing methods for monitoring antimicrobials in the environment.</p> <p><a href="#">Download pdf in English</a></p>
<p>The performance of AST programmes relevant to aquaculture and aquaculture products</p> <p>Author: FAO</p> 	2019	<p>Best practice guidelines for the performance and interpretation of antimicrobial susceptibility testing for bacterial species isolated from aquatic animals.</p> <p><a href="#">Download pdf in English:</a></p>

Document	Year	Description of contents and links
<p>Initiatives for Addressing Antimicrobial Resistance in the Environment: Current Situation and Challenges</p> <p>Author: Wellcome Trust / CDC / UK SIN</p> 	<p>2018</p>	<p>Scientific Literature review on knowledge gaps on AMR in the environment following the International Environmental AMR forum hosted by the U.S. CDC, the U.K SIN and the Wellcome Trust in April 2018. An executive summary of the key conclusions can be download <a href="#">here</a></p> <p><a href="#">Download pdf in English</a></p>

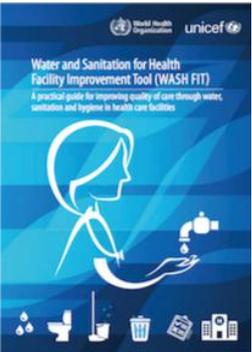
## Section V. Health System Strengthening for AMR, AMU and AMS

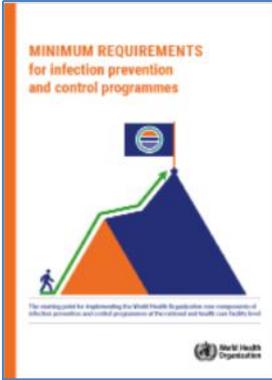
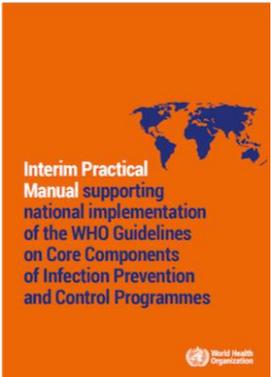
Document	Year	Description of contents and links
<p>Antimicrobial Stewardship Programmes in Health-Care Facilities in LMICs</p> <p>Author: WHO</p> 	<p>2019</p>	<p>Toolkit for implementation of an AMS programme in health-care facilities in LMICs. Covers situational analysis, planning, AMS interventions, and assessing AMS programmes.</p> <p><a href="#">Download pdf in English</a></p>
<p>Tackling Antimicrobial Resistance Together –Working paper 1.0: Multisectoral Coordination</p> <p>Author: WHO</p> 	<p>2018</p>	<p>Offers practical tips and suggestions on how to establish and sustain the multisectoral coordination needed to develop and implement National Action Plans on AMR (NAPs), intended for anyone with responsibility for addressing AMR at country level. Summarizes lessons learned from operational experience in Ethiopia, Kenya, the Philippines and Thailand.</p> <p><a href="#">Download pdf in English</a></p>
<p>WHO Competency Framework for Health Workers' Education and Training on AMR</p> <p>Author: WHO</p> 	<p>2018</p>	<p>Contains core and additional AMR competencies in awareness, appropriate use, infection prevention and control, diagnostic stewardship, and surveillance for healthcare workers, prescribers, public health officers and health service managers.</p> <p><a href="#">Download pdf in English</a></p>

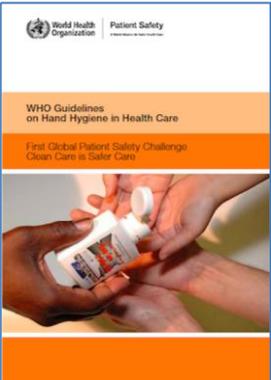
Document	Year	Description of contents and links
<p>Human Antibiotic Stewardship Programs in Resource-Limited Settings: National and Hospital levels</p> <p>Author: CDC</p> 	2018	<p>Provides a framework for developing national and facility level antimicrobial stewardship programs in LMIC settings based on expert opinion and experiences in implementing AMS programmes in the United States and globally.</p> <p><a href="#">Download pdf in English</a></p>
<p>Antimicrobial Resistance: A Manual for Developing National Action Plans</p> <p>Author: FAO OIE WHO</p> 	2016	<p>Developed at the request of the World Health Assembly to assist countries in the initial phase of developing or refining national action plans in line with the strategic objectives of the Global Action Plan.</p> <p>Outlines an incremental approach that countries can adapt to their specific needs and resources.</p> <p>Supporting tools have also been developed by WHO, in collaboration with FAO and OIE, to accompany this manual, including sample terms of reference for suggested coordination mechanisms, a generic template for a national action plan, and a sample plan for monitoring and evaluation.</p> <p><a href="#">Download pdf in English</a></p>
<p>Laboratory Quality Management System</p> <p>Author: WHO</p> 	2011	<p>Provides a comprehensive reference on Laboratory Quality Management System for public health and clinical laboratories, based on ISO 15189 and CLSI GP26-A3.</p> <p><a href="#">Download pdf in English</a></p> <p><a href="#">Download pdf in French</a></p>

<p>Developing Health Management Information Systems – A practical guide for developing countries</p> <p>Author: WHO</p> 	2004	<p>User-friendly reference for the development of health management information systems (HMIS).</p> <p><a href="#">Download pdf in English</a></p>
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## Section VI. Infection Prevention and Control and WASH

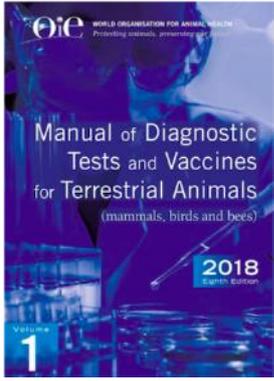
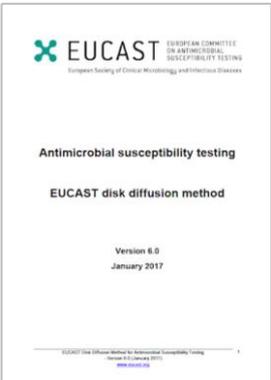
Document	Year	Description of contents and links
<p>Technical brief on water, sanitation, hygiene and wastewater management to prevent infections and reduce the spread of AMR</p> <p>Author: FAO OIE and WHO</p> 	2020	<p>Provides evidence and guidance for inclusion of WASH activities in AMR National Action Plans.</p> <p>Addresses WASH and wastewater management issues, including for unused medicines, in the following settings:</p> <ol style="list-style-type: none"> <li>1. households and communities</li> <li>2. health care facilities</li> <li>3. animal and plant production</li> <li>4. antimicrobial manufacturing</li> </ol> <p><a href="#">Download pdf in English</a></p>
<p>Water and Sanitation for Health Facility Improvement Tool (WASH FIT). A practical guide for improving quality of care through water, sanitation and hygiene in health care facilities</p> <p>Author: WHO UNICEF</p> 	2019	<p>Provides a risk-based approach for improving WASH and healthcare waste management infrastructure and services in health-care facilities in LMICs.</p> <p><a href="#">Download pdf in English</a></p> <p><a href="#">Download pdf in French</a></p>
<p>Best Practices for Environmental Cleaning in Healthcare Facilities: in Resource-Limited Settings</p> <p>Author: CDC</p> 	2019	<p>Provides guidance on best practices, cleaning procedures and recommended PPE for resources limited settings.</p> <p><a href="#">Download pdf in English</a></p>

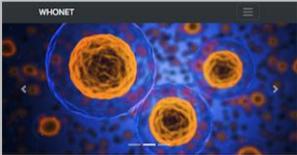
Document	Year	Description of contents and links
<p>Minimum Requirement for infection prevention and control programmes</p> <p>Author: WHO</p> 	<p>2019</p>	<p>Presentation of 8 core components of IPC at the national and health care facility levels.</p> <p><a href="#">Download pdf in English</a></p>
<p>Guidelines on Sanitation and Health</p> <p>Author: WHO</p> 	<p>2018</p>	<p>Guidelines to promote safe sanitation systems and practices. Summarizes the evidence on the links between sanitation and health, provides evidence-informed recommendations, and offers guidance for encouraging international, national and local sanitation policies and actions that protect public health.</p> <p><a href="#">Download pdf in English</a></p>
<p>Interim Practical Manual supporting national implementation of the WHO Guidelines on Core Components of Infection Prevention and Control Programmes</p> <p>Author: WHO</p> 	<p>2017</p>	<p>Practical manual focusing on the development of a sustainable action plan informed by the local context to put into operation the WHO ICP Guideline recommendations.</p> <p><a href="#">Download pdf in English</a></p>

Document	Year	Description of contents and links
<p>Guidelines for the prevention and control of carbapenem-resistant Enterobacteriaceae, <i>Acinetobacter baumannii</i> and <i>Pseudomonas aeruginosa</i> in health care facilities</p> <p>Author: WHO</p> 	<p>2017</p>	<p>A specific IPC guideline targeting the prevention and control of carbapenem-resistant Enterobacteriales, <i>Acinetobacter baumannii</i> and <i>Pseudomonas aeruginosa</i>.</p> <p><a href="#">Download pdf in English</a></p>
<p>Implementation manual to prevent and control the spread of carbapenem-resistant organisms at the national and health care facility level</p> <p>Author: WHO</p> 	<p>2019</p>	<p>Interim practical manual supporting implementation of the Guidelines for the prevention and control of carbapenem resistant Enterobacteriales in health care facilities (see above).</p> <p><a href="#">Download pdf in English</a></p>
<p>WHO Guidelines on Hand Hygiene in Health Care</p> <p>Author: WHO</p> 	<p>2009</p>	<p>Evidence based guidelines for hand hygiene.</p> <p><a href="#">Download pdf in English</a></p>

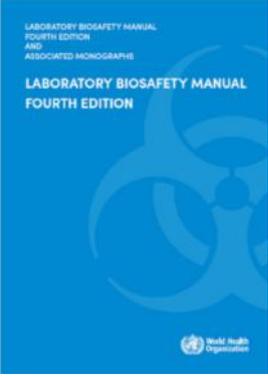
## Section VII. Antimicrobial susceptibility testing standards and protocols

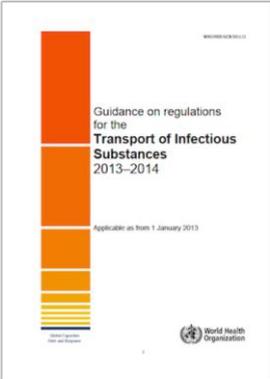
Document	Year	Description of contents and links
<p>EUCAST Breakpoint tables for interpretation of MICs and zone diameters</p> <p>Author: EUCAST</p> 	2021 v11	<p>Current EUCAST breakpoints for antimicrobial susceptibility testing.</p> <p><a href="#">Download pdf version</a></p> <p><a href="#">Download Excel file</a></p> <p>More guidance document from EUCAST can be access here: <a href="#">antimicrobial susceptibility testing</a> and <a href="#">EUCAST Guidance documents in susceptibility testing</a></p>
<p>CLSI M100-S30 Performance Standards for Antimicrobial Susceptibility Testing</p> <p>Author: CLSI</p> 	2020 30 <sup>th</sup> ed	<p>Current CLSI breakpoints for antimicrobial susceptibility testing for CLSI methods M02, M07, and M11.</p> <p>Access CLSI website to download the latest standard here: <a href="#">M100</a> (The 31st edition should be available in March 2021)</p> <p>An online version (free of charge) is accessible here: <a href="https://www.clsi.org/standards/products/free-resources/access-our-free-resources/">https://www.clsi.org/standards/products/free-resources/access-our-free-resources/</a></p>
<p>CLSI M02-S13 Performance Standards for Antimicrobial Disk Susceptibility Tests</p> <p>Author: CLSI</p> 	2018 13 <sup>th</sup> ed	<p>Current CLSI recommended methods for disk susceptibility testing and criteria for quality control testing.</p> <p>Additional methods and microbiology standards can be downloaded through the CLSI website <a href="#">here</a></p> <p><a href="#">Download pdf in English</a></p>

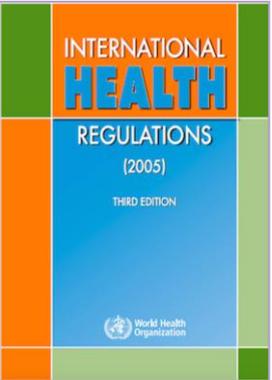
Document	Year	Description of contents and links
<p>CLSI M07-S11 Methods for Dilution Antimicrobial Susceptibility Tests for Bacteria That Grow Aerobically</p> <p>Author: CLSI</p> 	<p>2018 11<sup>th</sup> ed</p>	<p>Standard reference methods for determining minimal inhibitory concentrations of aerobic bacteria by broth macrodilution, broth microdilution, and agar dilution.</p> <p><a href="#">Download pdf in English</a></p>
<p>Laboratory Methodologies for Bacterial Antimicrobial Susceptibility Testing</p> <p>Author: OIE</p> 	<p>2019</p>	<p>In Chapter 2.1.1 of the Manual of Diagnostic Tests and Vaccines for terrestrial Animals.</p> <p>The full terrestrial Manual can be accessed <a href="#">here</a></p> <p><a href="#">Download Chapter 2.1.1 in English</a></p>
<p>EUCAST Antimicrobial susceptibility testing disk diffusion method</p> <p>Author: EUCAST</p> 	<p>2021 v9</p>	<p>Current EUCAST recommended method for antimicrobial susceptibility testing by disk diffusion</p> <p><a href="#">Download pdf in English</a></p>

Document	Year	Description of contents and links
<p>EUCAST guidelines for detection of resistance mechanisms and specific resistances of clinical and/or epidemiological importance</p> <p>Author: EUCAST</p> 	<p>2017 v2</p>	<p>Current EUCAST recommended methods for detecting / confirming specific resistance mechanisms. Includes methods for Carbapenemase-Producing Organisms, extended-spectrum <math>\beta</math>-lactamase-producing Enterobacteriaceae, acquired AmpC <math>\beta</math>-lactamase-producing Enterobacteriaceae, polymyxin resistance and MRSA.</p> <p><a href="#">Download pdf in English</a></p>
<p>EUCAST Media preparation for disk diffusion testing and for determination of MIC values by the broth microdilution method</p> <p>Author: EUCAST</p> 	<p>2019 v6.0</p>	<p>Methods for media preparation for standardised antimicrobial susceptibility testing.</p> <p><a href="#">Download pdf in English</a></p>
<p>WHONET</p> <p>Author: WHO collaborating Centre for Surveillance of Antimicrobial Resistance</p>  <p>The microbiology laboratory database software.</p> <p>WHONET is a free desktop Windows application for the management and analysis of microbiology laboratory data with a particular focus on antimicrobial resistance surveillance developed and supported by the WHO Collaborating Centre for Surveillance of Antimicrobial Resistance at the Brigham and Women's Hospital in Boston, Massachusetts. WHONET is available in 28 languages, supports local, national, regional, and global surveillance efforts in over 2,500 hospitals, public health, animal health, and food laboratories in over 150 countries worldwide.</p> <p>Features include:</p> <ul style="list-style-type: none"> <li>• Laboratory configuration</li> <li>• Data entry and critical reporting</li> <li>• Data analysis and report generation</li> <li>• Data exports to surveillance networks including WHO GLASS, EARS-Net, CASAR, Re-AURA, and JARS</li> <li>• Support for 23 human (H010, M01, M02, M03, M04, M05, M06, M07, M08, M09, M10, M11, M12, M13, M14, M15, M16, M17, M18, M19, M20, M21, M22, M23, M24, M25, M26, M27, M28, M29, M30, M31, M32, M33, M34, M35, M36, M37, M38, M39, M40, M41, M42, M43, M44, M45, M46, M47, M48, M49, M50, M51, M52, M53, M54, M55, M56, M57, M58, M59, M60, M61, M62, M63, M64, M65, M66, M67, M68, M69, M70, M71, M72, M73, M74, M75, M76, M77, M78, M79, M80, M81, M82, M83, M84, M85, M86, M87, M88, M89, M90, M91, M92, M93, M94, M95, M96, M97, M98, M99, M100) and veterinary (V010, V020, V030, V040, V050, V060, V070, V080, V090, V100) organisms</li> </ul>	<p>2019</p>	<p>WHO Collaborating Centre for Surveillance of Antimicrobial Resistance free software for collecting and reporting AMR data, compatible with GLASS.</p> <p><a href="#">Access to the website</a></p>

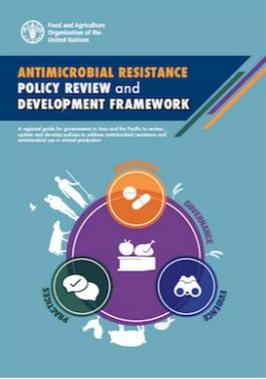
## Section VIII. Biosafety and Biosecurity

Document	Year	Description of contents and links
<p>Laboratory Biosafety Manual 4<sup>th</sup> edition</p> <p>Author: WHO</p> 	<p>2021</p>	<p>This fourth edition of the Biosafety Manual adopts a risk and evidence-based approach to biosafety to balance safety measures with the actual risk of working with biological agents</p> <p><a href="#">Download pdf in English</a></p>
<p>Guideline for Disinfection and Sterilization in Healthcare Facilities</p> <p>Author: CDC</p> 	<p>2008 up date 2019</p>	<p>Provides a comprehensive description of procedures for the disinfection and sterilization of healthcare equipment and surfaces.</p> <p><a href="#">Download pdf in English</a></p>
<p>Biosafety and biosecurity: Standard for managing biological risk in the veterinary laboratory and animal facilities</p> <p>Author: OIE</p> 	<p>2015</p>	<p>Chapter 1.1.4 of the Manual of Diagnostic Tests and Vaccines for terrestrial Animals.</p> <p><a href="#">Download pdf in English</a></p> <p>The full terrestrial Manual can be accessed <a href="#">here</a></p>

Document	Year	Description of contents and links
<p>Safe Management of wastes from health-care activities</p> <p>Author: WHO</p> 	<p>2014 2<sup>nd</sup>ed</p>	<p>Also Known as the “Blue Book” this Guidance address the vast domain of healthcare waste from the risks associated with them, supporting policy guidance, management planning, storage and transportation, treatment and disposal including wastewater etc.</p> <p><a href="#">Download pdf in English</a></p>
<p>Guidance on regulations for the Transport of Infectious Substances</p> <p>Author: WHO</p> 	<p>2012</p>	<p>Practical guidance to facilitate compliance with applicable international regulations for the transport of infectious substances and patient specimens by all modes of transport, both nationally and internationally.</p> <p><a href="#">Download pdf in English</a></p>
<p>Biosafety in Microbiological and Biomedical Laboratories 5th Edition</p> <p>Author: US DHHS / CDC / NIH</p> 	<p>2009</p>	<p>Advisory document on the best practices for the safe conduct of work in biomedical and clinical laboratories from a biosafety perspective.</p> <p><a href="#">Download pdf in English</a></p>

Document	Year	Description of contents and links
<p>Laboratory biosecurity guidance</p> <p>Author: WHO</p>  <p>The cover features a vertical bar on the left with horizontal stripes in shades of blue and purple. The text on the cover includes 'Biorisk management', 'Laboratory biosecurity guidance', and 'September 2006'. The WHO logo is at the bottom right.</p>	<p>2006</p>	<p>WHO guidance for laboratory biosecurity.</p> <p><a href="#">Download pdf in English</a></p>
<p>International Health Regulations – Third edition</p> <p>Author: WHO</p>  <p>The cover has a central blue rectangle with the text 'INTERNATIONAL HEALTH REGULATIONS (2005) THIRD EDITION'. The background is divided into green and orange vertical bands. The WHO logo is at the bottom.</p>	<p>2005 3<sup>rd</sup> ed</p>	<p>International regulations intended to prevent, protect against, control and provide a public health response to the international spread of disease.</p> <p><a href="#">Download pdf in English</a></p> <p><a href="#">Download pdf in French</a></p>
<p>Common Minimum Technical Standards and Protocols for Biobanks Dedicated to Cancer Research</p> <p>Author: WHO IARC</p>  <p>The cover features a purple background with a white vertical bar on the left containing the text 'IARC TECHNICAL PUBLICATIONS'. The main title is in white and pink. The bottom right corner says 'IARC TECHNICAL PUBLICATION NO. 44'. The background image shows a hand using a pipette on a multi-well plate.</p>	<p>2017</p>	<p>Provides evidence-based guidelines and recommendations for human tissue biobanks in high-, middle- and low-income countries, and addresses the ethical, legal, social issues surrounding storage and sharing of biological materials. Although focused on cancer research, the principles can be broadly applied to other storage systems including bacterial biobanking.</p> <p><a href="#">Download pdf in English</a></p>

## Section IX. Other documents

Document	Year	Description of contents and links
<p>Antimicrobial Resistance Policy Review and Development Framework</p> <p>Author: FAO Asia-Pacific</p> 	<p>2018</p>	<p>Provides a framework to assess and review existing policies and legislation on AMR and AMU</p> <p><a href="#">Download pdf in English</a></p>
<p>OIE Aquatic AH Code – 6.5. Risk analysis for AMR arising from the use of AM agents in Aquatic Animals</p> <p>Author: OIE</p> 	<p>2015</p>	<p>Outlines the problems related to antimicrobial use in aquatic animals</p> <p><a href="#">Download pdf in English</a></p>
<p>OIE Terrestrial AH Code – 6.11. Risk Analysis for AMR Arising from the use of AM Agents in Animals</p> <p>Author: OIE</p> 	<p>2004 revised 2015</p>	<p>Outlines the problems related to antimicrobial use in any environment, including human, animal and other uses.</p> <p><a href="#">Download pdf in English</a></p>

Document	Year	Description of contents and links
<p>OIE Aquatic AH Code – 6.2. Principles for Responsible and Prudent Use of Antimicrobial Agents in Aquatic Animals</p> <p>Author: OIE</p> 	<p>2011</p>	<p>Provides guidance for the responsible and prudent use of antimicrobial agents in aquatic animals, with the aim of protecting both animal and human health.</p> <p><a href="#">Download pdf in English</a></p>
<p>OIE Terrestrial AH Code – 6.10. Responsible and Prudent Use of Antimicrobial Agents in Veterinary Medicine</p> <p>Author: OIE</p> 	<p>2003 rev - ised 2014</p>	<p>Provides guidance for the responsible and prudent use of antimicrobial agents in veterinary medicine, with the aim of protecting animal and human health as well as the environment. Defines the respective responsibilities of the Competent Authority and stakeholders.</p> <p><a href="#">Download pdf in English</a></p>

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