Annex 5. Technical guidance and resources for NAP AMR implementation

GAP objective 1: Improve awareness and understanding of AMR through effective communication, education and training.

Legend

National level | National and facility level | Health care facility level

	Document title	Description	Available langauages
Health worker education	WHO competency framework for health workers' education and training on antimicrobial resistance (2018)	The main purpose of this document is to strengthen efforts at the country level to address AMR by outlining a set of core and additional competencies to guide the education and training of health workers. The competency framework is aimed primarily at pre-service and in-service health education and training institutions, accreditation and regulatory bodies and health policy- and decision-making authorities.	English
	Health workers' education and training on antimicrobial resistance: curricula guide (2019)	The purpose of this curricula guide is to strengthen the ability of educators to deliver quality and standard education and training on AMR, including how antimicrobials are procured, prescribed and used.	English
E-learning resources	Antimicrobial stewardship: a competency-based approach	This course will equip clinicians who frequently prescribe antimicrobials with knowledge and tools to improve their use of these essential medications in daily clinical practice. The course highlights how AMS principles can be applied to common clinical scenarios.	English French Italian Spanish Russian
	Infection prevention and control course series	The IPC channel hosts general courses designed for all health workers, as well as more advanced courses specific to IPC focal points. The goal is to strengthen health workers' IPC knowledge and advance the IPC focal points' capacity to implement facility-led IPC efforts. The channel includes courses on COVID-19 preparedness, readiness and response, as well as IPC strategies required to prevent and mitigate the spread of COVID-19 infections in health facilities.	Multiple
	Reducing antimicrobial resistance of treatable sexually transmitted infections in antenatal care	The aim of this course is to help to improve the prevention, detection, treatment and cure of sexually transmitted infections and other reproductive tract infections in settings serving pregnant women and their families.	English

AMR: antimicrobial resistance; AMS: antimicrobial stewardship; GAP: Global Action Plan; IPC: infection prevention and control; NAP: national action plan; TAP: tailoring AMR programmes; WHO: World Health Organization.

	Document title	Description	Available langauages
Awareness and advocacy	World Antimicrobial Awareness Week campaign materials	Celebrated annually, World Antimicrobial Awareness Week (WAAW) aims to increase awareness of global AMR and to encourage best practices among the general public, health workers and policymakers to avoid the further emergence and spread of drug-resistant infections. The campaign website lists all former WAAW campaigns and associated advocacy materials.	Arabic English Chinese French Russian Spanish
	Antimicrobial resistance advocacy briefs	This suite of advocacy documents was created by the WHO Regional Office for Europe to explain how AMR affects health in different contexts and how focusing on different sectors can contribute to managing AMR.	English Russian
Behaviour change	The TAP quick guide: a practical handbook for implementing tailoring antimicrobial resistance programmes (2021)	This guide has been developed to assist Member States in initiating and undertaking projects to address the spread of AMR in their countries. The guide is designed to assist national level TAP working groups in using a behavioural insights approach to identify appropriate and feasible interventions to begin tackling AMR in their contexts.	English
	The TAP toolbox: exercises, tools and templates to support your tailoring antimicrobial resistance programmes plan (Chapters 1 and 2) (2021)	The TAP process assists Member States in initiating and undertaking projects to address the spread of AMR in their countries. The TAP Toolbox contains a series of exercises and is aligned with the stages outlined in the TAP Quick Guide. The Toolbox is designed to be used by a TAP working group as they work through the stages outlined in the TAP Quick Guide.	English

GAP objective 2: Strengthen the knowledge and evidence base through surveillance and research

Legend

National level Health care facility level

	Document title	Description and implementation use	Available langauages
Integrated AMR surveillance	Integrated surveillance of antimicrobial resistance in foodborne bacteria: application of a one health approach (2017)	The purpose of this guidance is to assist WHO Member States and other stakeholders in establishing and developing programmes of integrated surveillance of AMR in foodborne bacteria. It describes a step-by-step approach to designing a programme of integrated surveillance of AMR in foodborne bacteria and includes recommended standardized and validated AST methods, harmonized interpretive criteria, and approaches to the collection and reporting of AMC and AMU data.	English

	Document title	Description and implementation use	Available langauages
AMR surveillance	GLASS manual for early implementation (2015)	This manual provides guidance on participation in global antibacterial resistance surveillance in humans to those responsible for AMR surveillance nationally; proposes steps for developing national surveillance systems and adherence to GLASS; and provides indicators for measuring implementation of a national surveillance programme.	English Chinese French Russian Spanish
	National AMR surveillance systems and participation in the GLASS: a guide to planning, implementation, and monitoring and evaluation (2016)	This document is primarily intended to benefit capacity building in countries with limited resources, particularly in the planning phase of setting up national AMR surveillance in the human sector. It outlines the key steps in planning and establishing a national AMR surveillance system and describes the three core components of the system and how each should function and work together. It will also assist countries in formulating and implementing an M&E strategy for the system.	English
	National AMR surveillance systems and participation in the GLASS: core components checklist and questionnaire (2016)	The items included in the checklist and questionnaire are based on the core components of the national AMR surveillance system as proposed by GLASS and described in the WHO documents GLASS manual for early implementation and the National antimicrobial resistance surveillance systems and participation in the Global Antimicrobial Surveillance System (GLASS) – a guide to planning, implementation, and monitoring and evaluation	English
AMC/AMU surveillance	WHO methodology for point prevalence survey on antibiotic use in hospitals (2019)	This document aims to provide a standardized methodology for use in LMICS to estimate the prevalence of antibiotic use in hospitals; to collect information on prescribing antibiotics; to support policymakers and practitioners for improving antibiotic use; and to provide a standardized tool for hospitals.	English
	GLASS methodology for surveillance of national antimicrobial consumption (2020)	This publication gives an overview of the WHO methodology for the national surveillance of AMC and principles for data collection and reporting, including data sources, ATC/DDD classification, variables and reporting metrics. The publication also provides instructions on setting up a national surveillance system for AMC, data flow between countries and WHO, and the GLASS-AMC IT platform.	English French
	GLASS manual on the management of antimicrobial consumption data (2020)	This manual summarizes the WHO methodology for a global programme on surveillance of AMC. It is intended to guide countries on how to use the GLASS-AMC Microsoft Excel template to prepare national AMC surveillance data according to the WHO methodology, produce national AMC data files to foster AMC data analysis at the national level and facilitate preparation of national AMC data for submission to GLASS-AMC.	English French
	GLASS guide for national surveillance systems for monitoring antimicrobial consumption in hospitals (2020)	With this document, WHO proposes an approach for monitoring AMC in hospitals, based largely on the WHO methodology used for monitoring AMC at the national level. One of the main differences between hospital and national monitoring methodology relates to the use of local hospital activity data instead of population-based data as the reference value (denominator) for AMC.	English

	Document title	Description and implementation use	Available langauages
Laboratory capacity and diagnostics	GLASS whole-genome sequencing for surveillance of antimicrobial resistance (2016)	The purpose of this document is to discuss the benefits and limitations of current WGS technologies for AMR surveillance, report the results of an analysis of application of WGS to single bacterial pathogens for AMR surveillance and outline the requirements for building new WGS laboratories or upgrading existing laboratories to ensure capacity for WGS.	English
	Diagnostic stewardship: a guide to implementation in antimicrobial resistance surveillance sites (2016)	A guide that outlines steps to be taken by clinicians and other front-line health-care workers for the diagnostic pathway, and organizational and structural elements that must be in place to facilitate diagnostic stewardship.	English
	Proof-of-principle antimicrobial resistance routine diagnostics surveillance project (PoP project) (2018)	Developed by the WHO Regional Office for Europe, the objective of this project is to identify bacteria causing bloodstream infections and their antibiotic susceptibility patterns. The protocol provides guidance on active case finding, aseptic venepuncture procedures and laboratory procedures, including timely feedback of results. In addition, the project provides guidance on species identification and the use of EUCAST for AST.	English Russian
	Molecular methods for antimicrobial resistance diagnostics to enhance the GLASS (2019)	Technical note providing an overview of the benefits, costs, limitations and challenges of the molecular diagnostics considered and of molecular AMR diagnostics that could be used for surveillance in non-reference laboratories and clinical settings.	English
	GLASS guidance for national reference laboratories (2020)	Technical guidance focusing specifically on the functions and activities of NRLs for national surveillance of AMR. Details of the various functions are provided, including reference functions such as confirmation and characterization of resistance mechanisms, quality control for surveillance sites, external quality assessment, outbreak support, guidance and standardization, test validation and verification, provision of training, data collection and analysis for national surveillance of AMR and laboratory assessments. Countries can use this document to establish or improve NRL capacity within the national AMR surveillance system.	English
Burden of disease	GLASS method for estimating attributable mortality of antimicrobial resistant bloodstream infections (2020)	This is a protocol for a prospective cohort study to estimate mortality attributable to community and hospital-acquired AMR bloodstream infections for each selected AMR pathogen in selected health-care facilities.	English

AMC: antimicrobial consumption; AMR: antimicrobial resistance; AMU: antimicrobial use; AST: antimicrobial susceptibility testing; EUCAST: European Committee on Antimicrobial Susceptibility Testing; GLASS: Global Antimicrobial Resistance Surveillance System; IT: information technology; LMICS: low- and middle-income countries; M&E: monitoring and evaluation; NRL: national reference laboratory; WGS: whole-genome sequencing; WHO: World Health Organization

GAP objective 3: Reduce the incidence of infection through effective sanitation, hygiene and infection prevention measures.

Legend

National level | National and facility level | Health care facility level | Primary health care level

	Document title	Description and implementation use	Available langauages
IPC assessment	Supporting national implementation of the WHO Guidelines on core components of infection prevention and control programmes: national level tool (IPCAT 2) (comprehensive), *under assessment tools* (2017)	The WHO National IPC Assessment Tool 2 (IPCAT2) will assist countries in determining the core components already in place and in identifying gaps and weaknesses to guide action planning. IPCAT2 corresponds to the core component recommendations of the guidelines targeted at the national level. Its purpose is to help assess, plan, organize and implement a national IPC programme.	English
	Instructions for the national infection prevention and control assessment tool 2 (IPCAT2) (2017)	Instruction manual for using the IPCAT2.	English
	Assessment tool of the minimum requirements for infection prevention and control programmes at the national level (2021)	This tool will assist countries in determining the minimum requirements for each core component that is in place and to identify those that need to be achieved. This tool is mostly based on selected indicators included in IPCAT2.	English
	Infection prevention and control assessment framework at the facility level (2018)	The IPC Assessment Framework is a tool to support the implementation of the WHO guidelines on core components of IPC programmes at the acute health care facility level. The user should be familiar with the contents of these guidelines, including the Interim practical manual supporting implementation of the IPC core components at the facility level before using this tool.	English
Pathogen specific IPC	Guidelines for the prevention and control of carbapenem-resistant Enterobacteriaceae, Acinetobacter baumannii and Pseudomonas aeruginosa in health care facilities (2017)	The primary objective of these guidelines is to provide evidence- and expert consensus-based recommendations on the early recognition and specific required IPC practices and procedures to effectively prevent the occurrence and control the spread of carbapenem-resistant Enterobacteriaceae, *A. baumannii* and *P. aeruginosa* (CRE-CRAB-CRPsA) colonization and/or infection in acute health-care facilities.	English
	Implementation manual to prevent and control the spread of carbapenem-resistant organisms at the national and health care facility level (2019)	This practical manual is designed to support national IPC programmes and health-care facilities to achieve effective implementation of WHO's Guidelines for the prevention and control of carbapenem-resistant Enterobacteriaceae, A. baumannii and P. aeruginosa in health care facilities in the context of their efforts to improve the quality and safety of health service delivery and the health outcomes of the people who access these services.	English

	Document title	Description and implementation use	Available langauages
Surgical site infection (SSI) prevention	Global guidelines for the prevention of surgical site infection, 2nd edition (2018)	The aim of these guidelines is to provide a comprehensive range of evidence-based recommendations for interventions to be applied during the pre-, intra- and postoperative periods for the prevention of SSI, while also considering aspects related to resource availability and values and preferences.	English
	Preventing surgical site infections: implementation approaches for evidence-based recommendations (2018)	The purpose of this document is to present a range of tested approaches to achieve successful SSI prevention implementation at the facility level, including in the context of a broader surgical safety climate.	English
	Implementation manual to support the prevention of surgical site infections at the facility level – turning recommendations into practice (2019)	This manual builds on the approaches previously outlined in Preventing surgical site infections: implementation approaches for evidence-based recommendations, particularly multimodal strategies. It is intended as an "operational" manual for the WHO SSI prevention recommendations. The manual is aimed at all those concerned with the prevention of SSI.	English
WASH	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 (2018)	WASH FIT is a multistep, iterative process to facilitate improvements in WASH services, quality and experience of care. It is primarily designed for use in primary health-care facilities. WASH FIT covers four broad areas: water, sanitation (including health-care waste management), hygiene (hand hygiene and environmental cleaning) and management. Each area includes indicators and targets for achieving minimum standards for maintaining a safe and clean environment.	Arabic English French Spanish Russian
	Water, sanitation and hygiene in health care facilities: practical steps to achieve universal access to quality care (2019)	This document includes practical steps that Member States can take at the national and subnational level and the WHO and UNICEF response to the 2018 UN Secretary General's Call to Action.	English French Russian Spanish
	Technical brief on water, sanitation, hygiene (WASH) and wastewater management to prevent infections and reduce the spread of antimicrobial resistance (AMR) (2020)	This technical brief provides a summary of evidence and rationale for WASH and wastewater actions within NAP AMRs and sector specific policy to combat AMR. Evidence and actions are presented in the domains of; coordination and leadership, households and communities, health care facilities, animal and plant production, manufacturing of antimicrobials, and surveillance and research.	English French Portuguese Russian Spanish
	Understanding barriers to quality care: an approach for conducting a situational analysis of quality and WASH in health care facilities, *under relevant publications* (2021)	This document describes an approach for conducting a national situational analysis of WASH as a basis for improving quality of care. A situational analysis is the first of the eight practical steps recommended by WHO and UNICEF as a means to trigger action to improve and sustain WASH in health care facilities, a prerequisite for providing quality care.	English
Immunization	Leveraging vaccines to reduce antibiotic use and prevent antimicrobial resistance: an action framework (2020)	This document presents a strategic vision for vaccines to contribute fully, sustainably and equitably to the prevention and control of AMR by preventing infections and reducing antimicrobial use. It identifies a series of priority actions to be taken by stakeholders in the fields of immunization and AMR, in three areas: expanding the use of licensed vaccines to maximize impact on AMR; developing new vaccines that contribute to the prevention and control of AMR; and expanding and sharing knowledge on the impact of vaccines on AMR.	English

	Document title	Description and implementation use	Available langauages
IPC programme	Guidelines on core components of infection prevention and control programmes at the national and acute health care facility level (2016)	The objectives of this document are to provide evidence-based recommendations on the core components of IPC programmes and to support countries and health-care facilities in developing or strengthening IPC programmes and strategies.	English Spanish
	Interim practical manual: supporting national implementation of the WHO guidelines on core components of infection prevention and control programmes (2017)	This practical manual is designed to support implementation of the WHO guidelines on core components of IPC programmes at the national level, with a special focus on countries with limited resources.	English
	Improving infection prevention and control at the health facility: interim practical manual supporting implementation of the WHO guidelines on core components of infection prevention and control programmes (2018)	This practical manual is designed to support health-care facilities to achieve effective, stepwise implementation of their IPC programmes according to the WHO guidelines on core components of IPC programmes.	English
	Minimum requirements for infection prevention and control programmes (2019)	The purpose of this document is to present and promote the minimum requirements for IPC programmes at the national and health care facility level, identified by expert consensus according to available evidence and in the context of the WHO core components of IPC programmes.	English
	Infection prevention and control: guidance to action tools (2021)	This publication by the WHO Regional Office for Europe consists of three focused improvement tools, called "aide-memoires", which focus on respiratory and hand hygiene; personal protective equipment; and environmental cleaning, waste and linen management, all elements of standard, droplet/contact and airborne precautions. The tools include a range of practical actions that are known to support guidance to action and therefore improve both practices and outcomes. They should be used by IPC focal points, primarily at facility level.	English
	Strengthening infection prevention and control in primary care: a collection of existing standards, measurement and implementation resources (2021)	This document aims to support those working in primary care to strengthen IPC, informed by existing WHO IPC guidance and implementation resources. It brings together existing WHO IPC standards, indicators and implementation approaches that are focused on, or directly relevant to, IPC in primary care. It should also be used to identify resources suitable for use in primary care that can be embedded within relevant IPC or other health programmes.	English
	Strengthening infection prevention and control in primary care (2021)	This document provides a collecting of existing standards, measurements and implementation resources to strengthen IPC in the primary care setting.	English

AMR: antimicrobial resistance; CRE-CRAB-CRPsA: carbapenem-resistant Enterobacteriaceae, Acinetobacter baumannii and Pseudomonas aeruginosa; IPC: infection prevention and control; NAP AMR: national action plan on AMR; UN: United Nations; UNICEF: United Nations Children's Fund; WASH: water, sanitation and hygiene; WASH FIT: Water and Sanitation for Health Facility Improvement Tool; WHO: World Health Organization.

GAP objective 4: Optimize the use of antimicrobial medicines in human health.

Legend

National level | National and facility level | Health care facility level

	Document title	Description and implementation use	Available langauages
AMS	Step-by-step approach for development and implementation of hospital and antibiotic policy and standard treatment guidelines (2011)	Developed by the WHO Regional Office for South-East Asia, this document focuses on the mechanism to develop a practically applicable hospital antibiotic policy and standard treatment guidelines (STGs). In addition, the document contains information on various effective strategies for implementation of STGs.	English
	Antimicrobial stewardship programmes in health-care facilities in low- and middle-income countries: a WHO practical toolkit (2019)	The specific aim of the toolkit is to enable AMS in health care facilities in LMICs. It includes structures that should be in place to support AMS at the national and facility level, AMS interventions to be performed at a health care facility level, and education and training for health care professionals performing AMS.	Arabic English French Russian Spanish
	WHO policy guidance on integrated antimicrobial stewardship activities (2021)	This guidance aims to provide a set of evidence-based, pragmatic recommendations to drive comprehensive and integrated AMS activities under the purview of a central national coordination unit, national AMR steering or coordinating committees, or other equivalent national authorities. The policy guidance complements the GAP, the WHO practical toolkit for AMS programmes in health care facilities in LMICs and other WHO guidance in surveillance, IPC and WASH.	English French Spanish
	Antimicrobial stewardship interventions: a practical guide (2021)	This practical guide describes 10 commonly used stewardship interventions which promote the optimal use of antimicrobials at health care facilities. Administrators, health care leaders and front-line clinicians learn about the most common interventions and the evidence behind them, as well as important implementation considerations, particularly for low-resource settings.	English
	Recommendations for implementing antimicrobial stewardship programmes in Latin America and the Caribbean: manual for public health decision-makers *(2018)*	Developed by the WHO Regional Office for the Americas, this document provides comprehensive and practical guidance for national authorities and decision-makers in Latin America and the Caribbean on the implementation of AMS programmes related to human health, and aligned with quality of care and patient safety.	English

	Document title	Description and implementation use	Available langauages
Antimicrobial selection	Model list of essential medicines	The electronic essential medicines list (eEML) is a comprehensive, freely accessible online database containing information on essential medicines (including antimicrobials). The database provides a blueprint on which countries can base their own national lists. The eEML combines detailed pharmaceutical data with evaluation of benefits, harms and costs.	English
	Critically important antimicrobials for human medicine: 6th revision (2018)	This document is intended for public health and animal health authorities, practicing physicians and veterinarians, and other interested stakeholders involved in managing AMR to ensure that all antimicrobials, especially critically important antimicrobials, are used prudently both in human and veterinary medicine.	English French Spanish Infograph-ics in all UN languages
	WHO AWaRe antibiotic categorization	This tool provides recommendations for 21 common infectious diseases, classifies antibiotics into three groups based on the potential to induce and propagate resistance, and identifies antibiotics that are priorities for monitoring and surveillance of use.	English
Quality of antimicrobials	WHO good manufacturing practices for pharmaceutical products: Main principles (Annex 2, WHO Technical Report Series, No. 986) (2014)	This guide covers good manufacturing practice for medicines. It is applicable to operations for the manufacture of medicines in their finished dosage forms, including large-scale processes in hospitals and the preparation of supplies for use in clinical trials. The good practices outlined within the document are to be considered general guides, and they may be adapted to meet individual needs.	English
	Guidance for post-market surveillance and market surveillance of medical devices, including in vitro diagnostics (2020)	This document pertains to the objectives and processes for post-market surveillance for medical devices conducted by manufacturers with the assistance of their economic operators, as well as market surveillance conducted by regulators, and the role of other stakeholders in these processes.	English Russian Spanish
	TRS 1025 – Annex 6: points to consider for manufacturers and inspectors: environmental aspects of manufacturing for the prevention of antimicrobial resistance (2020)	This document is intended to provide recommendations and expectations for manufacturing facilities for medicines regarding waste management, to mitigate/prevent potential AMR; raise awareness of medicines' manufacturers, national regulatory authorities and especially good manufacturing practice (GMP) inspectorates and inspectors in all Member States, on sections of relevant GMP guidance that are applicable to the management of waste/wastewater from the production of antimicrobials; and provide clarification on the interpretation of those clauses and specific measures that should be taken to be considered compliant with the relevant sections of GMP guidance.	English

AMR: antimicrobial resistance; AMS: antimicrobial stewardship; AWaRe: Access, Watch, Reserve; LMICs: low- and middle-income countries; NRAs: national regulatory authorities; UN: United Nations; WHO: World Health Organization.

GAP objective 5: 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.

Legend

National level

	Document title	Description and implementation use	Available langauages
Antimicrobials	Prioritization of pathogens to guide discovery, research and development of new antibiotics for drug-resistant bacterial infections, including tuberculosis (2017)	This is a list of priority pathogens to guide and promote research and development (R&D) of new antibiotics as part of WHO's efforts to address growing global resistance to antimicrobial medicines. The list is divided into three categories according to the urgency of need for new antibiotics: critical, high and medium priority.	English Russian
	Target product profiles for needed antibacterial agents: enteric fever, gonorrhoea, neonatal sepsis, urinary tract infections and meeting report (2020)	The target product profiles (TPPs) provide companies and other product developers, regulatory agencies and research funders with a list of the specific characteristics of a future treatment that the drug developer should aim for in the development process. Each TPP comprises an introduction, rationale and summary of the preferred characteristics of the proposed product with a minimal and preferred TPP.	English
	A financial model for an impact investment fund for the development of antibacterial treatments and diagnostics (2020)	This financial model was prepared as part of an overall project on setting up an impact investment fund to foster development of new antibacterial treatments.	English
	2020 antibacterial agents in clinical and preclinical development: an overview and analysis (2021)	This report is part of WHO's efforts to prioritize and coordinate global R&D efforts to address the discovery void in antibacterial drug development	English
Diagnostics	Target product profiles for antibacterial resistance diagnostics (2019)	A TPP is a planning tool for the development of health products, including diagnostics. Industry uses in-house TPPs as planning tools to strategically guide development towards desired product characteristics. In particular, TPPs specify the product's intended use, target populations and desired attributes, and guide product development programmes. A WHO TPP document informs product developers, regulatory agencies, procurement agencies and funders on R&D and public health priorities. It is intended to facilitate the most expeditious development of products addressing the greatest and most urgent public health needs.	English
	Second WHO model list of essential in vitro diagnostics (2019)	This list presents in vitro diagnostics (IVDs) that are recommended by WHO for use in countries. The list is expected to provide guidance and serve as a reference for Member States (programme managers, laboratory managers, procurement officers and reimbursement officers) that are developing and/or updating national essential diagnostics lists for interventions within UHC and for selecting and using IVDs.	English
	The selection and use of in vitro diagnostics – TRS 1031 (2021)	Report of the third meeting of the WHO Strategic Advisory Group of Experts on In Vitro Diagnostics, 2020 (including the Third WHO model list of essential in vitro diagnostics).	English

UHC: universal health coverage; WHO: World Health Organization.