January 2026

CLINICAL ENGAGEMENT PROGRAM TO COMBAT AMR (CEP4AMR)

TACE ASIA
Technical Assistance for Clinical Engagement

MOTT MACDONALD

The Fleming Fund
Regional Grants

UK International Development
Partnership | Progress | Prosperity

Contributions

The team involved in the development of CEP4AMR includes Tauqeer Mustafa, Pem Chuki, Andreia Santos, Nimesh Poudyal.

Use of Document

This document is developed as part of the Technical Assistance for Clinical Engagement project, which is funded by the Department of Health and Social Care (DHSC)'s Fleming Fund using UK aid. The views expressed in this document are those of the authors and not necessarily those of the UK DHSC or its Management Agent, Mott MacDonald.

This document provides guidelines outlining clinical engagement activities and proposed strategies to combat antimicrobial resistance (AMR) in low- and middle-income countries (LMICs). It aims to support the development of future initiatives and investments in antimicrobial stewardship, infection prevention and control, and diagnostic stewardship within LMICs and beyond. The intended audience includes stakeholders involved in AMR research, policy formulation, regulatory decision-making, funding AMR initiatives, and infectious disease management programs. This encompasses sectors such as academia, government agencies, philanthropic organizations, private industry, international bodies, and the general public.

Disclaimers

All reasonable precautions have been taken by the authors to verify the information included in this draft. However, the content is being provided without any warranty, expressed or implied. The responsibility for interpreting and using the material lies solely with the reader.

Table of contents

Abbreviations 3

Introduction 4

Purpose of the regional framework 6

Scope of the Regional Framework for implementation of CEP4AMR 8

1. Regional Level: 8

2. National Level: 8

3. Facility Level: 8

Key considerations for implementing the program at facility level 9

Structure of Clinical Engagement Program (CEP) 10

Step 1: Situational analysis and benchmarking for CEP 10

Step 2: Developing & designing the implementation strategies and plans 13

Step 3: Implementation 15

3.1 Guidelines 16

(a) AMS Integration 16

(b) IPC Collaboration 18

(c) Diagnostic quality assurance & stewardship 19

3.2 Strategie(s) and tool(s) that can be used across the components 21

(a) Education and Training 21

(b) Clinical and Diagnostic Pathways and Guidelines 23

Step 4: Monitoring and evaluation of CEP 25

Step 5: Sustainability strategy 26

Annexure 28

Workplan 28

Tools 30

1. Clinical Engagement Facility Planning Tool 30

2. Infection Prevention and Control (IPC) Assessment Tool- Health Facility 43

3. Laboratory Assessment Tool 52

References 60

Abbreviations

AMC	Antimicrobial consumption
AMR	Antimicrobial resistance
AMU	Antimicrobial use
AMS	Antimicrobial stewardship
CE	Clinical engagement
CEP4AMR	Clinical Engagement Program to Combat AMR
CEP	Clinical engagement program
CES	Clinical Engagement strategy
CG	Country Grant
DRI	Drug Resistance Infection
DS	Diagnostic stewardship
EMR	Electronic medical record
FGD	Focus group discussion
FF	Fleming Fund
HCAIs	Healthcare-associated infections
IPC	Infection prevention control
IP-CAF	Infection prevention and control assessment framework
IP	Implementation plan
LAT	Laboratory assessment tool
LMICs	Low-Middle Income Countries
M&E	Monitoring and evaluation
MoU	Memorandum of understanding
NAP	National action plan
PPS	Point prevalence survey
QMS	Quality Management System
QA	Quality Assessment
RG	Regional Grant
SOPs	Standardized operating procedures
SME	Subject matter expert
TACE	Technical Assistance for Clinical Engagement
ToRs	Terms of references
TWG	Technical working group
WT	Wellcome Trust
KPIs	Key performance indicators

Introduction

Antimicrobial resistance (AMR) is a global and silent pandemic, representing one of the most significant threats to public health worldwide[1]. To combat the AMR crisis, essential interventions such as early diagnostic, vaccination strategy, infection prevention control (IPC) and antimicrobial stewardship programs are fundamental[1,2]. Effective AMR containment requires coordinated efforts across central and local governments, healthcare facilities, and various professions. In order to conserve the effectiveness of current antimicrobials for the future, we must focus on several key activities:

1. Awareness & Advocacy
2. Surveillance
3. Infection Control & Prevention
4. Optimizing and promote appropriate antimicrobial use
5. Economic Justification

In this context, Clinical Engagement (CE) plays a pivotal role in the fight against AMR, serving as an initial step towards promoting the utilization of laboratory testing prior to prescribing antimicrobial, and promoting safe and appropriate use of these life-saving medicines.

The Fleming Fund's current efforts to enhance AMR surveillance have underscored the need for stronger engagement between clinical colleagues and microbiology laboratories. This collaboration is essential to improve the quality of results and make better use of the capabilities being developed in pathogen detection, identification, susceptibility testing, and data management. Maximizing these benefits requires robust support systems and a focus on local needs, ensuring that engagement translates into tangible improvements in patient care and clinical practices.

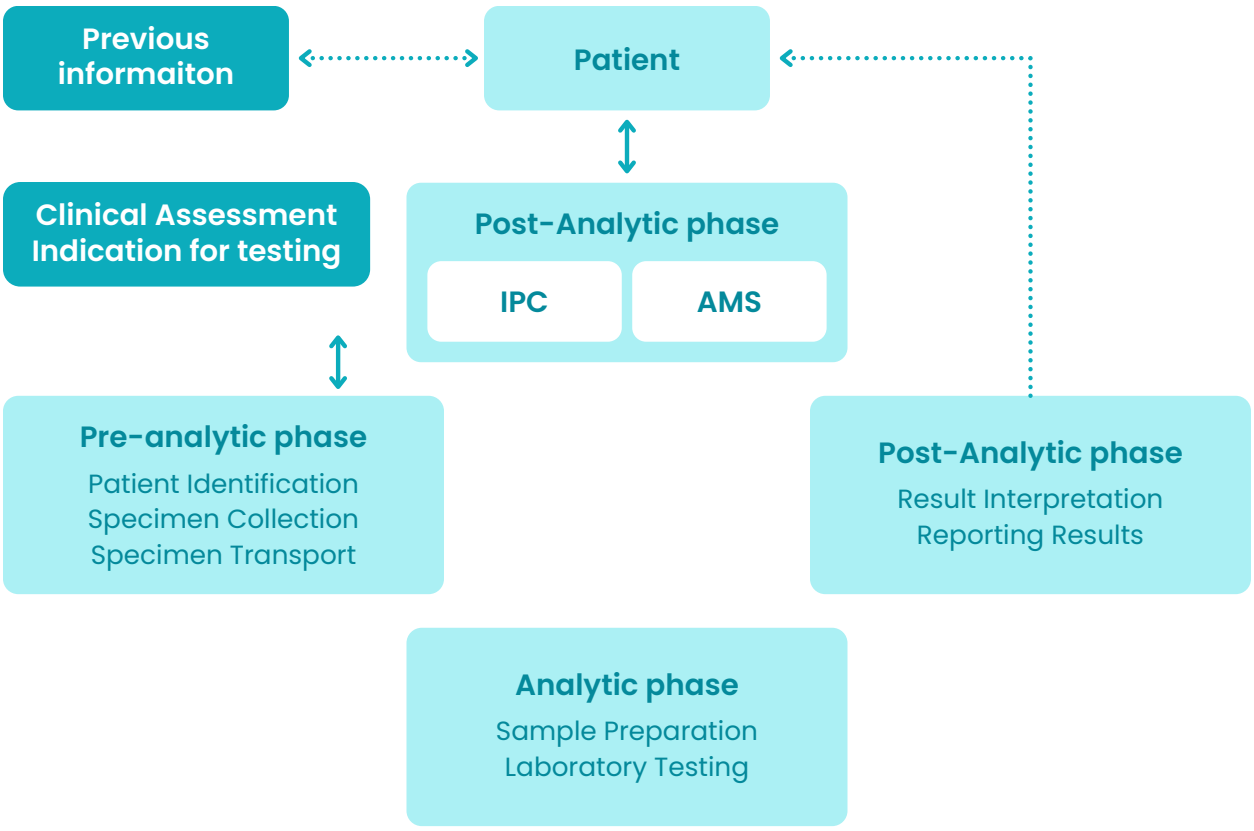
Within the framework of initiatives of the UKaid programme through Fleming Fund (FF), CE encompasses a comprehensive approach involving both clinical and laboratory personnel. This approach facilitates the establishment, utilization, and management of bacteriology services within healthcare systems. The primary aim is to enhance patient care by ensuring the appropriate use of antimicrobials, focusing on addressing practice and behavioral changes, rather than solely relying on policies. The program effectiveness was recognized when it won a global antimicrobial stewardship prize from the AMR Industry Alliance, highlighting its positive impact on AMR awareness and practice in clinical settings[3,4].

In the broader fight against AMR, microbiology and genomics have emerged as promising tools offering enhanced solutions for clinical patient management, outbreak preventions, research, and the development of targeted interventions, including personalized medicine. Recognizing their significance, multiple global investments, including contributions from Fleming Fund (FF), the Wellcome Trust (WT), etc. have been made to strengthen the laboratory capacity to combat AMR and improve clinical outcomes.

However, despite these investments, the translation and utilization of microbiology and genomic insights in Low-Middle Income Countries (LMICs) face significant challenges. There is a shortage of diagnostics due to resource constrains or delayed diagnosis of drug resistance infection (DRI) owing to reliance on conventional microbiological methods requiring longer turnaround time for result generation at all levels of health care facility.

These barriers including lack of expertise, lack of awareness about the importance of diagnostic stewardship and underutilization of diagnostic services by the prescribers due to lack of confidence in those, impede the effective utilization of these technologies, necessitating exploration and resolution to fully realize the benefits of investing in AMR mitigation.

The figure below illustrates the lifecycle of clinical bacteriology services, emphasizing their integral role in clinical decision-making for the treatment and management of infectious diseases. The cycle is completed with ongoing monitoring and evaluation of patient outcomes, ensuring that treatment protocols are effective and contributing to continuous improvements in clinical engagement and infectious disease management. This lifecycle forms the core aim of the framework, which seeks to enhance clinical engagement decision-making in infectious disease care.



Purpose of the regional framework

This framework aims to guide planning and implementation of Clinical Engagement Program to Combat AMR (CEP4AMR) at facility level or national level. The goal of this CEP is to control, manage and improve the variables that determine the outcome of infectious diseases management. These variables can broadly be divided under three major categories; prescription and antimicrobial usage related, diagnostics and microbiological testing related and the ones that contribute to spread of infection especially the most resistant hospital acquired infections. This CEP has been designed to not only improve these components as stand alone determinants, but also create synergies to increase the impact exponentially.

Below are the major objectives of this CEP:

- Optimizing and promoting appropriate antimicrobial use – Support appropriate prescribing by providing updated technical knowledge to the prescribers and giving mentorship for improving practice.

- Leveraging diagnostics utilization - Increase awareness and understanding of the importance of bacteriology lab services among healthcare professionals. Promote the appropriate utilization of bacteriology lab tests for accurate diagnosis and targeted treatment.

- Preventing infections – Enhance infection prevention and control measures by leveraging bacteriology lab data for surveillance and outbreak management.

- Strengthening healthcare systems - Encourage collaboration between clinicians, microbiologists, and infection control/Antimicrobial stewardship (AMS) teams to optimize patient outcomes. Multidisciplinary and efficient communication approach for infectious disease management in a healthcare setting.

- Facilitating continuous quality improvement – Establish mechanisms for ongoing monitoring, evaluation, and feedback – such as a platform for the integration of recent advances in microbiology, genomics, and other innovative technologies into clinical practice to drive continuous improvement in antimicrobial stewardship and patient care practices.

- Sustainability - Ensure the continued effectiveness and scalability of interventions while minimizing environmental impact. Collaboration with stakeholders and organizations fosters ongoing support, maximizing the benefits to healthcare systems and communities for the following years.

  This framework is designed for the south and southeast Asia region, where similar settings and practices support the applicability of the available evidence, making it implementable in most countries of the region[5]. There are, however, certain assumptions that directly affect the scope of this program and hence should be reviewed beforehand.

  - Apart from the routine operation of the hospital, additional resources might be required for implementation of this program. The program has been implemented in other countries (Pakistan) with support of international development funds.
  - The framework, since based on the above mentioned experiences, suggests external technical support to run the first cycle of the program, yet the program can be managed and implemented independently.

- Scale of resources required can vary extensively and will be directly determined by the existing status, identified gaps and commitment and dedication level of the administrators and implementers.
- In the absence of external support, hospital's technical and administrative leadership can take the role and engage short term technical assistance, if required, to support the roll out process.

Scope of the Regional Framework for implementation of CEP4AMR

Major focus of this framework is the steer the implementation of CEP4AMR at the facility level. Under ideal circumstances, the program will be supported and managed by national and regional teams. We have, however, also suggested adaptive strategies under each step to facilitate the implementation in absence of any such support. Below are the broader actions expected at each level.

1. Regional Level:

- Strategy Development: Outline best practices and help integrate them into existing structures.
- Support: Assist national and facility-level activities.

2. National Level:

- Coordination: Lead in-country activities, engage with government, and align with national initiatives.
- Facility Support: Identify hospitals, facilitate planning, and support implementation.
- Collaborations: Foster relationships with national and international professional societies and agencies.
- Monitoring & Feedback: Assist with monitoring and provide feedback on facility performance.

3. Facility Level:

- Information Gathering: Use the Clinical Engagement Planning Tool to assess needs and develop plans.
- Planning & Implementation: Create detailed site-specific plans, prepare facilities, and execute actions.
- Monitoring & Refinement: Track progress, evaluate effectiveness, and refine based on feedback.
- Interdepartmental Cooperation: Facilitate communication and collaboration between laboratory staff, clinical providers, pharmacists, and administrators.

- Professional Development: Enhance knowledge and skills through continuous education and feedback loops.
- Engagement Mechanisms: Establish and maintain effective mechanisms for ongoing collaboration and information exchange.
- Local Strategy Development: Work on creating detailed, locally relevant strategies based on the Regional framework and facility-specific needs.
- Continuous Improvement: Regularly review and refine engagement processes to ensure they meet evolving needs and challenges.

Key considerations for implementing the program at facility level

Below are some key considerations to ensure a successful implementation of this framework at facility level.

1. Assess capacity and progress:
    - Situation analysis: Recognize that different hospitals are at different stages of capacity and action in AMR containment.
    - Tailored approach: Adapt strategies to the current capabilities, structure and needs of each facility.
2. Leverage existing structures:
    - Entry points: Utilize existing programs and structures like AMS (Antimicrobial Stewardship), IPC (Infection Prevention and Control), and AMR surveillance as starting points for engagement.
3. Flexibility and adaptation:
    - Dynamic strategies: Be prepared to adapt the approach based on feedback and evolving circumstances.
4. Inclusivity:
    - Broad participation: Ensure participation from multidisciplinary departments/ units within the hospital.
    - Engage at all stages: Involve teams in all phases—assessment, planning, and implementation.
5. Administrative and leadership support:
    - Senior leadership buy-in: Secure commitment and support from senior clinical and administrative leadership.
6. Focus areas:
    - Three main pillars: Concentrate efforts on diagnostics, antibiotic use, and infection control.

- Existing collaborations: Integrate and build upon any existing collaborative efforts in these areas.

7. Monitoring and feedback:
    - Identify indicators: Develop and track indicators to monitor progress and effectiveness.
    - Implement and review: Regularly monitor and provide feedback to ensure continuous improvement.

Structure of Clinical Engagement Program (CEP)

Considering the best practices to achieve the objectives listed above, a program consisting of steps using a range of tools and mechanisms has been developed, as described below:

Step 1: Situational analysis and benchmarking for CEP

- Objectives

- Assess the potential sites for inclusion in the clinical engagement program.
- Assess the current state of prescribing practices, IPC and diagnostic services at the selected site(s).
- Identify gaps, challenges, and opportunities for improvement of all three CEP aspects .
- Set baselines to assess the efficiency and effectiveness of CE interventions.

- Methodology
  - Assess all the proposed site(s) using the CE site assessment tools for inclusion and prioritization for CEP. If only one site is proposed for the program, conduct the situation analysis using the site assessment tool.
  - Review existing policies, guidelines, protocols and practices related to bacteriology lab services, infection prevention and control, antimicrobial stewardship program.
  - Analyze bacteriology lab test utilization data, antibiograms, antimicrobial prescribing patterns, and infection control metrics.
  - Conduct surveys or interviews with healthcare professionals (physicians, nurses, microbiologists, pharmacists, infection control practitioners, hospital administration/ management) to gather their perspectives and experiences.
  - Map the current processes and workflows related to bacteriology lab testing, result reporting, and antimicrobial prescribing.
  - Identify potential bottlenecks, inefficiencies, or areas for improvement in the existing processes.
  - Involve local subject matter experts in the mapping exercise to ensure accuracy and relevance.
  - Establish benchmarks through baseline surveys of all three components; Use Point Prevalence Surveys (PPS) for prescribing practices, Infection prevention and control assessment framework (IP-CAF) for IPC practices and laboratory assessment tool (LAT) for laboratory services.
  - Analyze the collected data and stakeholder inputs to identify gaps between current practices and best practices or desired outcomes.
  - Assess the gaps in knowledge, skills, resources, and infrastructure that may hinder effective clinical engagement with bacteriology lab services.
  - Identify opportunities for enhancing clinical engagement, such as educational initiatives, process improvements, technology integration, or policy changes.
  - Explore best practices from other healthcare settings or institutions that have successfully implemented clinical engagement strategies.
  - Collaborate with stakeholders to generate innovative ideas and solutions tailored to the specific needs and context of the healthcare setting.

- Deliverables
  - CE site assessment report: to decide on inclusion or exclusion of the site in the program and identification of major gaps and areas of intervention related to CEP
  - Benchmarking reports, if included any or all of the PPS, IP-CAF and Lab assessment will be conducted for benchmarking and identification of technical gaps, depending upon the identified needs and resources available. Based on the benchmarking, one or more comprehensive reports summarizing the findings of each exercise will be developed.

Step 1 : Situational analysis and benchmarking for CEP				
Activities	1.1 Review existing Policies, Practices, SOPs, guidelines, manuals, and AMS/IPC documents, communication mechanisms		1.2 Identify stakeholders and conduct surveys, interviews, Focus group discussion (FGD)	
Responsibilities	FF Country Grantee - to identify stakeholders and organize the meeting (FFCGs)		RG (TACE)- support CG to review and do the surveys and assessments	
Output (s)/ Deliverable (s)	1. Site Assessment report		2. Benchmark reports for AMS, Diagnostics and IPC	
Timeline & duration	September 2024 (5-6 days)			
Resources/ Tools*	1. CE site assessment tool	2. IP-CAF	3. LAT	4. PPS
Mode of Execution	Face to face interactions between national/regional experts and implementation teams			
Adaptation	In the absence of Fleming Fund regional grant, country grant or any external support, hospital administration or technical leadership can engage national level experts on AMS, IPC and diagnostic stewardship. Three teams, 2-3 persons each, will be constituted from			

	within the hospital for the above mentioned thematic areas from relevant departments. The experts will train the teams on conducting the baseline assessments and benchmarking, using the tools mentioned above. Each team will prepare a technical report of their assessment. Experts will then review and consolidate the reports and guide facility teams on designing the program interventions for that specific facility.

*Refer to the Annexure

Step 2: Developing & designing the implementation strategies and plans

- Objectives
  - Plan and design targeted interventions, based on findings of baseline assessments, to improve all or selected components through CE with and among healthcare professionals
  - Gather insights from key stakeholders to inform the development of a comprehensive clinical engagement strategy (CES) and implementation plan (IP).
  - Foster collaboration and buy-in from key stakeholders throughout the implementation process.
  - Ensure sustainability and continuous improvement of CE initiatives is part of the design.

- Methodology
  - Engage an institution/hospital having state of the art practices for Antimicrobial use (AMU), IPC and Diagnostics as implementing partner. In case of unavailability of any such institution, subject matter expert (SME) can be engaged.
  - Establish a multidisciplinary technical working group (TWG) for designing and planning the implementation; consisting of subject experts, professionals from country grant, implementing partner and technical and administrative departments of the target site.
  - The TWG will define Key Performance Indicators (KPIs) and develop/tailor Clinical Pathways/guidelines as tools and targets for implementing the capacity building component (Step 3.2a).
  - It is suggested that 3 KPIs and one clinical pathway are targeted to be achieved annually. KPIs should preferably be correlated with the selected clinical pathways.
  - TWG will also develop training modules and training plan for the capacity building component (Step 3.2a).

- Design and prioritize interventions targeting AMS, IPC and Diagnostics using suitable tools and strategies such as education & training, clinical pathways and guidelines.
- Design detailed implementation plan outlining:
  a) Specific objectives and desired outcomes
  b) Target audience or stakeholders
  c) Implementation strategies and activities
  d) Required resources (human, financial, technological)
  e) Timelines and milestones
  f) Performance indicators and evaluation metrics

- Deliverables
  - A stakeholder engagement plan outlining strategies for ongoing collaboration and communication with key stakeholders throughout the clinical engagement program.
  - TORs for the TWG
  - Implementation framework and Workplan
  - Budget

Step 2: Developing & designing the implementation strategies and plan			
Activities	2.1 Design the targeted interventions tailored to the country/ site	2.2 Draft or review ToRs for the multidisciplinary team	
Responsibilities	FF Country Grantee - to identify teams and develop implementation plans	RG (TACE) - provides technical support	
Output (s)/ Deliverable (s)	1. TORS for the TWG and/or implementation team	2. Implementation Plan 3. KPIs, Clinical pathways/guidelines 4. Training manual and plan	5. Workplan 6. Budget
Timeline & duration	November 2024		

Resources/ Tools	1. Project Planning tools	2. M&E indicators
Mode of Execution	Virtual technical assistance support from TACE	
Adaptation	In the absence of national and regional support, the hospital leadership can engage subject matter experts who will define targets and devise plans in collaboration with the implementation teams. If the hospital has in-house capacity to develop these plans, they don't need to engage external experts, the outputs should be reviewed for quality though.	

Step 3: Implementation

- Objectives
  - Implement the program at the target site through practical engagement with the hospital.
  - Ensure improvement in all or selected components of the CEP

- Methodology
  - Hire the program implementation team as part of country grant or engage an implementing partner that should preferably be a tertiary/quaternary level healthcare facility, preferably with a teaching institute and with state of the art AMS program
  - Engage at least one champion from within the target site for each of the components i.e AMS, IPC and Diagnostic Stewardship (DS)
  - Get formal permission from the hospital administration for implementation of the program
  - Roll-out the program

- Deliverables
  - Contracts with staff/implementing partner and CEP champions
  - Letters of permission by the top management of target sites

- Implementation guidelines and strategies

  Below are specific implementation guidelines for each component of the program as well as strategies and tools that can be used across the components. This framework has listed all possible interventions, activities and deliverables that can

potentially contribute towards achieving the goals, the sites can, however, select based on the local needs and situation analysis. Please note that the axis for implementation of all sites related activities will be the KPIs and Clinical Pathways/guidelines developed according to the local needs and based on the baseline assessments. Staff will be trained to implement the pathways/guidelines and improve KPIs and success of the program will be measured not only through improvement in the systems, structure and capacity but also through improvement in the target indicators.

3.1 Guidelines

(a) AMS Integration

- Objectives
  - Promote the appropriate use of antimicrobials to optimize patient outcomes and minimize the development of AMR.
  - Integrate bacteriology lab data into AMS decision-making processes.

- Activity
  - Establish an interdisciplinary AMS committee comprising physicians, pharmacists, microbiologists, and infection control practitioners.
  - Develop and implement evidence-based AMS policies and guidelines, incorporating bacteriology lab data and DS principles.
  - Implement interventions such as:
    - ✓ Prospective audit and feedback on antimicrobial prescribing practices
    - ✓ Formulary restrictions and pre-authorization requirements for certain antimicrobials
    - ✓ Dose optimization based on bacteriology lab results and patient-specific factors
    - ✓ Leverage technology solutions, such as electronic medical record (EMR) systems and clinical decision support tools, to facilitate AMS interventions.
    - ✓ Conduct regular AMS rounds and case reviews, involving relevant stakeholders.
    - ✓ Provide education and training to healthcare professionals on AMS principles and practices.

- Evaluation and Continuous Improvement
  - Monitor and evaluate AMU patterns, antimicrobial resistance rates, and patient outcomes.
  - Conduct periodic audits to assess adherence to AMS policies and guidelines.

- Review and update AMS policies and interventions based on emerging evidence, local AMR patterns, and feedback from stakeholders.

- Deliverables
  - AMS committee and team list
  - Terms of references (ToRs)
  - AMS workplan and guidelines
  - Audit and feedback reports
  - AMS champion lists

3.1.a – Antimicrobial Stewardship Integration				
Activities	3.1.a.1 Establish multidisciplinary AMS committee	3.1.a.2 Review/ Develop and implement evidence-based AMS policies and guidelines	3.1.a.3 Audit to assess adherence to AMS policies and guidelines	
Responsibilities	FF Country Grantee - leads the drafting/ revision and implementation of evidence-based AMS policies and guidelines, training healthcare professionals - leads audit to see practice and behavior change		RG (TACE) - provides TA to review the docs drafts	
Output (s)/ Deliverable (s)	1. AMS committee team	2. ToRs	3. AMS workplan and guidelines	4. Audit reports
Timeline & duration	December 2024			
Resources/ Tools	1. Audit protocols/ tools		2. Training materials	
Mode of Execution	Virtual technical assistance support from TACE			

Adaptation	This is a site based activity and can easily be managed by the site even in the absence of national or regional support. Technical quality assessment (QA) of the TORs, policies and guidelines will be helpful though.

(b) IPC Collaboration

- Objectives
  - Enhance infection prevention and control measures to reduce the risk of healthcare-associated infections (HAIs) and the spread of AMR.
  - Leverage bacteriology lab data for surveillance, outbreak investigation, and targeted interventions.

- Activity
  - Establish a dedicated IPC committee, including infection control practitioners, microbiologists, and representatives from relevant clinical areas.
  - Develop/ review and implement evidence-based IPC policies and guidelines, incorporating bacteriology lab data and surveillance findings.
  - Implement interventions such as:
    - ✓ Hand hygiene campaigns and audits
    - ✓ Environmental cleaning and disinfection protocols
    - ✓ Isolation precautions and patient cohorting
    - ✓ Surveillance for HCAIs and AMR patterns
    - ✓ Utilize bacteriology lab data for outbreak investigation, source identification, and targeted control measures.
    - ✓ Collaborate with the AMS team to address the intersection of AMR and infection control.

- Evaluation and Continuous Improvement
  - Monitor and evaluate HAI rates, antimicrobial resistance patterns, and adherence to infection prevention and control protocols.
  - Conduct periodic audits and observations to assess compliance with infection prevention and control practices.
  - Review and update infection prevention and control policies and interventions based on emerging evidence, local epidemiological data, and feedback from stakeholders.

- Deliverables
  - IPC committee & team lists

- Terms of reference
- IPC workplan and guidelines
- Audit such as hand hygiene etc
- IPC champion lists

3.1.b – Infection Prevention and Control Collaboration					
Activities	3.1.b.1 Establish multidisciplinary IPC committee	3.1.b.2 Review/ Develop and implement evidence-based IPC control policies and guidelines	3.1.a.3 Audit to assess adherence to AMS policies and guidelines		
Responsibilities	FF Country Grantee - leads the drafting/ revision and implementation of IPC control, policies, and guidelines - leads M&E practices		RG (TACE) - provides TA to review the docs drafts		
Output (s)/ Deliverable (s)	1. IPC Committee and team lists	2. ToR	3. IPC workplan and guidelines	4. Audits	5. IPC champion lists
Timeline & duration	December 2024				
Resources/ Tools	1. Audit protocols/ tools		2. Training materials		
Mode of Execution	Virtual technical assistance support from TACE				
Adaptation	This is a site based activity and can easily be managed by the site even in the absence of national or regional support. Technical QA of the TORs, policies and guidelines will be helpful tough.				

(c) Diagnostic quality assurance & stewardship

- Objectives
  - Ensure the accuracy, reliability, and quality of bacteriology lab testing and related processes.

- Activity
  - Establish a quality assurance program for bacteriology lab services based on the gaps identified in baseline survey, including:
    - ✓ Proficiency testing and external quality assessment
    - ✓ Internal quality control measures
    - ✓ Validation and verification of test methods
    - ✓ Maintenance and calibration of equipment
    - ✓ Develop and implement standardized operating procedures (SOPs) for bacteriology lab testing, result reporting, and related processes.
    - ✓ Conduct regular audits and assessments to evaluate adherence to SOPs and identify areas for improvement.
    - ✓ Implement a robust quality management system, including documentation, corrective and preventive actions, and continuous improvement processes.
    - ✓ Establish a multidisciplinary quality improvement team to review and analyse quality data, identify root causes of issues, and implement corrective actions.
    - ✓ Provide education and training to laboratory personnel and relevant stakeholders on quality assurance principles and practices.

- Evaluation and Continuous Improvement
  - Monitor and evaluate quality indicators, such as turnaround times, error rates, and customer satisfaction.
  - Conduct periodic reviews of quality assurance processes and procedures, incorporating feedback from stakeholders and emerging best practices.
  - Implement continuous improvement initiatives based on quality data analysis and feedback from stakeholders

- Deliverables
  - Comprehensive Quality Assurance Program Document
  - SOPs
  - Audit and Assessment Reports
  - Quality Management System (QMS) Documentation

3.1.c – Diagnostic quality assurance & stewardship				
Activities	3.1.c.1 Establish a QA program for laboratories		3.1.c.2 Adapting/ Developing and Management of a QM System	
Responsibilities	FF Country Grantee - leads the implementation of the QA program and QM System		RG (TACE) - provides TA to review QA and QM tools and docs	
Output (s)/ Deliverable (s)	1. QA Program document	2. SOPs	3. Audit and Assessment Reports	4.QMS documentation
Timeline & duration	December 2024			
Resources/ Tools	Laboratory Assessment Tool			
Mode of Execution	Virtual technical assistance support from TACE			
Adaptation	In the absence of FF national and regional grants, the site can engage subject matter experts or nationally leading institutions for this activity. Since this activity involves external reviews and quality assessments, external support will have to be secured.			

3.2 Strategies and tools that can be used across the components

(a) Education and Training

- Objectives
  - Enhance healthcare professionals' knowledge and skills in;
    - providing high quality diagnostic services,
    - utilizing bacteriology lab services,
    - interpreting results, and applying antimicrobial stewardship principles
    - preventing and controlling infections in healthcare settings.
  - Foster a culture of continuous learning and professional development.

- Activity

- Develop a comprehensive training curriculum covering topics such as:
  - ✓ Importance of bacteriology lab services in patient care
  - ✓ Appropriate test ordering and interpretation
  - ✓ Antimicrobial stewardship principles and practices
  - ✓ Infection prevention and control measures
  - ✓ Ensuring high quality microbiological testing
- Utilize various training formats, including:
  - ✓ Workshops and seminars
  - ✓ Online modules and e-learning platforms
  - ✓ Case-based discussions and simulations
  - ✓ On-the-job training and mentorship programs
- Collaborate with subject matter experts, such as microbiologists, infectious disease specialists, and infection control practitioners, to develop and deliver training content.
- Establish a training schedule based on the training modules developed in step 2 and ensure participation from all relevant healthcare professionals, including physicians, nurses, pharmacists, and laboratory personnel.
- Incorporate training on recent advances of diagnostic techniques, emerging antimicrobial resistance patterns, and updated guidelines as they become available.

- Evaluation and Continuous Improvement
  - Conduct pre- and post-training assessments to evaluate knowledge and skill acquisition.
  - Gather feedback from participants on the effectiveness and relevance of the training programs.
  - Regularly review and update the training curriculum and materials based on feedback, emerging evidence, and changing needs.

- Deliverables
  - Training materials
  - Training reports

3.2.a – Education and Training	
Activities	3.2.a.1 Drafting training materials & continuous revision to incorporate recent advances

Responsibilities	FF Country Grantee - identifies participants and subject matter experts	RG (TACE) - supports in the drafting and organizing the training material and provides virtual mentorship
Output (s)/ Deliverable (s)	1. Training materials	2. Training reports
Timeline & duration	Once every 2 months	
Resource/ Tools	Pretest and posttest questionnaires	
Mode of execution	2 TACE experts travel for one face to face training	
Adaptation	This activity will need external support in the form of facilitation of trainings. In the absence of FF country or regional grants, hospital can engage subject matter experts, preferably those involved with the TWG at step 2.	

(b) Clinical and Diagnostic Pathways and Guidelines

- Objectives
  - Develop and implement evidence-based clinical and diagnostic pathways and guidelines that ensure the quality bacteriology testing and incorporate that into diagnosis and management of infectious diseases.
  - Promote standardized and consistent practices across the healthcare setting.

- Activity
  - Project TWG will develop the clinical pathways/guidelines as described in step 2, addressing the following key considerations;
    - ✓ Appropriate test ordering and interpretation
    - ✓ Quality testing following appropriate standards and guidelines
    - ✓ Empiric antimicrobial therapy selection, incorporate the AWaRe classification into the treatment guidelines
    - ✓ De-escalation and streamlining of antimicrobial therapy based on bacteriology lab results

  - ✓ Infection prevention and control measures
- Incorporate decision support tools, algorithms, and visual aids to facilitate the implementation of clinical pathways and guidelines.
- Provide education and training to healthcare professionals on the use and application of the clinical pathways and guidelines.
- Implement a phased rollout of the clinical pathways and guidelines, starting with pilot areas or departments before scaling up to the entire healthcare setting.

- Evaluation and Continuous Improvement
  - Monitor adherence to the clinical pathways and guidelines through audits and feedback mechanisms.
  - Evaluate the impact of the clinical pathways and guidelines on patient outcomes, antimicrobial use, and infection control measures.
  - Regularly review and update the clinical pathways and guidelines based on emerging evidence, local epidemiological data, and feedback from stakeholders.

- Deliverables
  - Clinical pathways/ guidelines
  - Audit reports of change in practice and behaviour

3.2.b – Clinical pathways & guidelines				
Activities	3.2.b.1 Establish multidisciplinary team members (project TWG)	3.2.b.2 Review existing guidelines or draft new guideline or treatment pathways	3.2.b.3 Incorporate AWaRe classifications	3.2.b.4 Audit the changes in practice & behavior
Responsibilities	FF Country Grantee - leads the drafting or revision of guidelines and clinical pathways in emergency dept - leads audit to see practice and behavior change		RG (TACE) - provides TA to review the drafts - provides TA in drafting the audit tool	

Output (s)/ Deliverable (s	1. Guidelines & clinical pathways	2. Audit tools	3. AWaRe integration
Timeline & duration	March 2025		
Resource/ Tools	Clinical pathway assessment tools		
Mode of execution	Virtual technical assistance support from TACE		
Adaptation	This is a site based activity and willingness and dedication of the leadership and implementers is most important. Hospital team can develop/tailor clinical pathways, guidelines and assessment tools, with minimal external support. For capacity building though, external facilitation will be required.		

Step 4: Monitoring and evaluation of CEP

- Objectives
  - Ensure adherence to implementation plans and timelines
  - Evaluate impact and effectiveness of CE program on outcomes of AMR trends, AMC/U surveillance and appropriate use of antibiotics and diagnostic services

- Methodology
  - Conduct surveys, focus group discussion and feedback
  - Conduct audits of diagnostic and antibiotic use and clinical guidelines
  - Track resource allocation and utilization during the program
  - Conduct interim and endline assessment surveys

- Deliverables
  - Reports on appropriate prescriptions, behavioral and practice change and appropriate diagnostic utilization
  - Implementation progress reports detailing adherence to plan, resource utilization, and barriers addressed
  - Evaluation reports on the effectiveness of implementation strategies

Step 4 : Monitoring and Evaluation				
Activities	4.1 Surveys, focus group discussions & feedback		4.2 Audits for prescription, behavioral and diagnostic utilization	
Responsibilities	FF Country Grantee - engagement with stakeholders and feedback, gathering the M&E data		RG (TACE) - support CG to review the surveys and assessments	
Output (s)/ Deliverable (s)	Report of effective CE			
Resources/ Tools	1. Feedback forms	2.Suggestion boxes	3.KPIs indicators	4. Audit
Mode of Execution	Virtual and if needed, 2 TACE experts involve in the audits, FGDs etc			
Adaptation	In the absence of FF country or regional grant, hospital leadership can assign this role to either external evaluators or form a neutral monitoring team from within the hospital.			

Step 5: Sustainability strategy

- Objectives
  - Ensure the long-term effectiveness and integration of the clinical engagement program
  - Incorporate CE program into institutional systems and policies for sustained impact
  - Foster continuous improvement and adaptation to recent advances in the CE program

- Methodology
  - Integration of CEP in the National action Plan and building on system
  - Integration of CEP into pre and in service Continuous Professional Development (CPD) programs/curriculums
  - Collaborate with institutional leaders to embed CEP policies and clinical pathways into organizational structures

- Deliverables
  - NAP with CEP integration
  - CEP modules/ curriculums
  - Institutional policies reflecting the integration and sustainability of the CEP

Step 5: Sustainability Strategy			
Activities	5.1 Development of NAP with CEP integration	5.2 Development of CEP curriculum for pre- and in-service professionals	
Responsibilities	FF Country Grantee - leads the integration of CEP into NAP and in institutes/ university for CEP curriculum	RG (TACE) - supports to review the documents	
Output (s)/ Deliverable (s)	1.National Action Plan with CEP integrated	2.CEP Curriculum/ module	
Resources/ Tools	NAP	Training modules	Online platforms
Mode of Execution	Virtual technical assistance support from TACE		
Adaptation	These are mostly advocacy activities; the institution level incorporation into systems can be managed by hospital leadership while the national level policy advocacy can be conducted by project TWG and hospital leadership.		

Annexure

Workplan

No	Activity	Output/Deliverable	Timeline											
			M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
1	Situation Analysis and Benchmarking	Baseline reports, Assessment report												
2	Taking hospital administration on board and ground work for implementing the program at facility level	Formal permission by hospital administration												
3	Establish multidisciplinary AMS committee	Committee notification and TORs AMS workplan												
4	Establish multidisciplinary IPC committee	Committee notification and TORs IPC workplan												
5	Establish TWG that develops implementation plan, training modules, clinical pathways, QA program for labs and KPIs	TORs of TWG Implementation Plan Training Modules Training Plan KPIs Clinical Pathways Labs QA program and SOP												
6	Training of AMS and IPC committees and other nominated staff as per training plan	Training reports												

7	Audit and monitoring of KPIs and implementation of clinical pathways and guidelines	Audit and monitoring reports													
8	Continuous assessment of the program and modification of implementation strategy	Monitoring reports and recommendations													
9	Final assessment	Endline assessment report													

Tools

1. Clinical Engagement Facility Planning Tool

Facility planning tool for clinical engagement to contain AMR

Overview

This planning tool is used for identification, assessment and planning of clinical engagement program at healthcare facility level. Objective of this program is to help each hospital to choose locally relevant and feasible activities to engage different professional groups within, through existing structures such as AMR surveillance, to enhance AMR containment activities.

The focus areas for these engagements will be
1. Microbiology diagnostics (building on the lab capacity strengthening activities to improve quality and utilisation of services and the results - individual and surveillance - generated by the lab;
2. Antibiotic use for treatment and prophylaxis (building on the use measurements to improve measurements and utilisation of results); and
3. IPC (utilising laboratory data and capacity to identify, prevent and control hospital infections)

This tool is developed by DAI in collaboration with and input from the Fleming Fund.
Version date: August 2024
For adaptation at country level if needed

Purpose

The overall goal is to help develop local hospital-specific CE objectives and plans, which are best suited for each facilty and will have the most impact. In order to acheve this goal, this tool collects information on current capacities and actions related to AMR that can be used as entry points and areas of improvement.It also aims to understand resources and time needed for potential activities in a hospital to faciliate hospitals identifying specific work areas (some examples are listed below). Thus, the information collected here will aid in the development of locally relevant hospital-specific strategy and action plans (for short and long terms). It will also provide baseline data on focus areas AMR/AMU/IPC situation in the facility.

Instructions

This planning assessment can be completed by 2 or 3 professionals from each hospital, including clincal leadership, AMR surveillance lead, pharmacist and others as needed. It will be good to include one national level/twinning institute for this task (can be online collaboration). This group will need training on how this tool is to be completed, which can be conducted by someone who has expertise in using this tool in half to one day. The completion of this tool can take about 2-3 days in each facility. The Fleming Fund Country Grant or the subject expert can provide remote support during each assessment (in real time if needed) and for formulating objectives and action plans based on the findings. The tool is divided into sections to collect data on structures, policies and guidelines, HR and current AMR/antimicrobial use (AMU)/IPC activities. Additionally, information must be collected using discussions with key informants and focus groups and entered into sheet "5. Interview Discussions". The last sheet, "6. Analyses and Recommendations", is to summarise findings in SWOT format and provide recommendations on specific objectives for CE in that facility.

Next Steps

After completing this tool, use the information from SWOT analyses to identify entry points and activities that can be implemented in the time frame available in that facility. Provide advice related to resources currently available and what is needed for the activities identified for that hospital. Refer to the minimum and additional objectives for CE listed below for guidance while choosing objectives and activities for that facility.

Minimum results of CEP that can be anticipated by the end of the program

1. Multidisciplinary committee exists with clear TORs, HR and sustainable financing to oversee AMR/AMU/IPC activities (if it already exists, explore strengthening; may not need additional reources)
2. Antibiotic use is measured using one or more methods - PPS, dispensing, audits (PPS must be conducted in at least a few facilities in each country)
3. Prescribers, dispensers and others involved in antibiotic use are educated utilising local data and plans to reinforce and continue education
4. Diagnostic, treatment (including prophylaxis) and IPC guidance and SOPs are updated using local AMR and AMU data (at least one of these, like OP antibiotic prescription, could be done centrally for a country and disseminated)
5. At least one indicator is established for diagnostics, antibiotic use and IPC each for continued measurement (at least one of each is preferred)

Additional results if capacities and time allow

1. Standardised IT-supported medical records to include information on patients' medicines, lab tests results and outcome
2. IT support for prescribing, measuring antibiotic use, and providing timely feedback
3. Repeated audits to measure appropriateness of use and feedback to prescribers, dispensers and administration
4. Measures in place for ensuring reliable supply chains for diagnostics, medicines and IPC
5. Data management capacity to include infrastructure, HR and funding to specifically address AMR/AMC and IPC
6. Cost benefit analyses conducted and reported

Please add more as relevant for your country and hospitals

References

1. Antimicrobial stewardship programmes in health care facilities in low and middle income countries: A WHO practical tool kit, 2019 https://www.who.int/publications/i/item/9789241515481
2. WHO: GLASS guide for national surveillance systems for monitoring antimicrobial consumption in hospitals, 2020 9789240000421-eng.pdf (who.int)
3. WHO methodology for point prevalence survey on antibiotic use in hospitals, 2019. https://apps.who.int/iris/bitstream/handle/10665/280063/WHO-EMP-IAU-2018.01-eng.pdf?sequence=1&isAllowed=y
4. WHO competency framework for health workers education and training on AMR 2018 https://apps.who.int/iris/bitstream/handle/10665/272766/WHO-HIS-HWF-AMR-2018.1-eng.pdf?ua=1
5. Diagnostic stewardship A guide to implementation in antimicrobial resistance surveillance sites, 2016 https://www.who.int/glass/resources/publications/diagnostic-stewardship-guide/en/
6. WHO: Minimum Requirements for infection prevention and control (IPC) programmes 2019 https://apps.who.int/iris/bitstream/handle/10665/330080/9789241516945-eng.pdf?ua=1
7. 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; facility-manual.pdf (who.int)
8. WHO | Service availability and readiness assessment (SARA)
Service Availability and Readiness Assessment (SARA) An annual monitoring system for service delivery Reference manual: 2015 https://www.who.int/healthinfo/systems/SARA_Reference_Manual_Chapter2.pdf?ua=1

Hospital Information Questionnaire

General information on the hospital

	Question	Additional detail if required	Answer
1.	Country		
2.	Name and designation of persons completing the questionnaire		
3.	Date and time of start of interview		
4.	Date and time of end of interview		
5.	Name(s) and title(s) of people who provided information		
6.	Name of the facility		
7.	Abbreviated name of facility		
8.	District/Region		
9.	Managing authority	Government Private Not for profit Faith based Other (specify)	
10.	Type of facility	Primary care Regional District University Referral Other (specify)	
11.	Urban/rural		
12.	Out patients only?	Yes No	
13.	Inpatient strength (total number of beds)		
14.	Outpatients per day (total numbers seen in one day)		
15.	Specialties available (list all - e.g. peds, internal med, surgery etc.)		
16.	Financing (Govt/patients/insurance/mixed)	If mixed, provide percentage of each	

HR

	Question	Answer - Please list number of staff present; count one staff member only once
1.	Generalist medical doctors	
2.	Specialist medical doctors	
3.	Nursing staff	
4.	Pharmacists	
5.	Microbiology lab staff	
6.	Clinical microbiologist	
7.	Other lab staff	
8.	Other staff	

Basic infrastructure

	Question	Additional detail if required	Answer
1.	Is there reliable internet connectivity?		
2.	What is the main source of power supply?	Mention all sources, including central supply, generator, other (specify)	
3.	What is the back up plan if main supply fails?		
4.	During the past week, how many times did the main supply fail?		
5.	During the power failures last week, did the back up perform reliably?		
6.	What is the main source of water?		
7.	Is there a 24hr running water supply in all areas?		
8.	Is the quality of water supply checked by any authority?	Name authority and qualities tested (e.g. microbiology, chemicals etc.)	

Support services

	Question	Additional detail if required	Answer
1.	Is there a pharmacy attached to the hospital?	Yes No	
2.	If yes, does it serve only IP, only OP or both IP and OP?		
3.	Is there a microbiology lab attached to the hospital?		
4.	If yes, does it serve only IP, only OP or both IP and OP?		
5.	Does the lab serve 24hrs of the day?	yes/no (if no, provide working times)	
6.	If there is no microbiology lab attached to hospital, where are samples sent for diagnostics?		
7.	Are there other diagnostic tests easily available that can guide antibiotic choice?	Blood counts/Xray/point of care tests - name all	
8.	Are there standard patient medical records for indication, agent, dose, route, etc.?		
8a.	for **inpatients**	Yes No	
8b.	for **outpatients**	Yes No	
9.	Is this electronic or paper based?		
10.	How well is this implemented?	None Well Partial	

Communications

	Question	Additional detail if required	Answer
1.	How is any information transmitted to all staff usually?	Meeting Electronic Other (specify)	
2.	Have there been any newsletters or feedback on any issue in the last one month?		
3.	Is any information reported to national structures?		
4.	If yes, what is reported?		
5.	How is this reported?	Paper Electronic Other (specify)	

Information on governance, structures, and data & communications

Answer the following questions; include notes useful for SWOT analyses and focus groups

Overall Governance & Structures

	Question	Answer	Notes
1.	Are AMR and antibiotic use (AMU) identified as priority areas by the hospital?		
2.	Are policy documents detailing scope and plans of the hospital for AMU/AMR/IPC available?		
3.	When was the AMR/AMU action plan(s) last updated?		
4.	Are there goals or targets set for any of these areas? (specify)		
5.	Are these aligned with national goals and timelines? (specify)		
6.	Is there an overall lead for AMU/AMR/IPC activities?		
7.	Is there an overall coordinator for AMU/AMR/IPC activities?		
8.	At what level is the leader? (Dept head/administrator/other, specify)		
9.	At what level is the coordinator? (microbiologist/clinician/nursing/other, specify)		
10.	How many AMR champions are there in the facility?		
11.	Where are they placed? (pharmacy/nursing/physician/microbiology etc.)		
12.	Are there multidisciplinary committees to oversee AMR/AMU/IPC activities?		
13.	Are there funds committed to AMR containment activities? (other than salaries)		
14.	What is the source of these funds? (institutional budget/projects/others)		
15.	Is cost-benefit analysis of AMR/AMU/IPC interventions measured?		
16.	If yes, provide details		

Accountability

	Question	Answer	Notes
1.	Is there a national body to which the hospital team currently reports on AMR/AMU or IPC?		
2.	Are there regular AMR/AMU/IPC activity reports on status and outcomes produced and disseminated to administration?		
3.	Are regular activity reports produced and disseminated to hospital staff?		

Health informatics

	Question	Answer	Notes
1.	How many computers are there in OP area?		
2.	How many computers are there in pharmacy dispensing area?		
3.	Are there computers in each ward?		
4.	Is patient level data collected using computer programmes? (yes/no/partial)		
5.	Which programme is used for hospital information?		
6.	Which programme is used for lab information?		
7.	Which programme is used in the pharmacy?		
8.	How much patient-level data is recorded and available for analyses? Since which year?		
8a.	Outpatient registration (paper based records/computerised/no reliable records)		
8b.	Outpatient prescriptions (paper based records/computerised/no reliable records)		
8c.	Outpatient dispensing (paper based records/computerised/no reliable records)		
8d.	Outpatient lab requests (paper based records/computerised/no reliable records)		
8e.	Outpatient charges (if applicable)		
8f.	Ward-wide admissions (paper based records/computerised/no reliable records)		
8g.	Inpatient prescriptions (paper based records/computerised/no reliable records)		
8h.	Inpatient dispensing (paper based records/computerised/no reliable records)		
8i.	Inpatient lab requests (paper based records/computerised/no reliable records)		
8j.	Micro lab sample reporting for clinical care (paper based records/computerised/no reliable records)		
8k.	Admission and discharge dates (paper based records/computerised/no reliable records)		
8l.	Outcome (recovered, died etc.) (paper based records/computerised/no reliable records)		
8m.	Any other? Specify		
8n.	Any other? Specify		
9.	How much collated data is presently available?		
9a.	Lab data on AMR surveillance		
9b.	Pharmacy procurement data		
9c.	Pharmacy dispensing data - OP/IP		
10.	How is the collation done? (manual from paper records/electronic)		

Data management

	Question	Answer	Notes
1.	Is there a special department or designated staff trained in data management?		
2.	Is there an office for AMR/AMU/IPC data management?		

Communications within hospital

	Question	Answer	Notes
1.	How is AMR surveillance data transmitted to staff? (newsletter/meetings/other specify)		
2.	How frequently is this done? (weekly/fortnightly/monthly/occasionally etc.)		
3.	How is AMR surveillance data transmitted to national structures?		
4.	Are there any publications from this hospital on AMR/AMU/IPC?		
5.	When was the last such publication?		
6.	Where was the last such information published?		
7.	What was the overall message in this publication?		

Answer the following questions separately for diagnostics, AMU and IPC

	Governance	Diagnostics	Antibiotic use	IPC
1.	Which multidisciplinary committee over sees each area of work?			
2.	If embedded in another committee, is IPC/AMR/AMU a standing item on agenda?			
3.	Is there a clear demonstrable coordination mechanism if there are more than one committees?			
4.	Is the membership, roles and responsibilities of all clearly defined?			
5.	Who is the current lead? (designation)			
6.	Are there clear and written TORs for this committee?			
7.	Do the TORs include			
7a.	Oversight of day to day implementation of activities?			
7b.	Updating guidance and SOPs			
7c.	Targeted training for staff			
7d.	Professional development mechanisms for junior staff			
7e.	Regular descriptive feed back reports to admin and staff			
7f.	Measuring impact using process and outcome indicators			
7g.	Other (specify)			
8.	Can additional TORs (on AMR/AMU/IPC) be added to any of these committees?			
9.	Are these TORS being implemented? (check records)			
10.	TOR 1 (describe)			
11.	TOR 2 (describe)			
12.	TOR 3 (describe)			
13.	Is record keeping on governance satisfactory?			
14.	Are these committees functioning satisfactorily to contain AMR, appropriate use and IPC?			
15.	If no, which are the main areas to address? (commitment, guidance, HR etc.)			

	Facility-wide engagement	Diagnostics	Antibiotic use	IPC
1.	What are the modes practiced? (meetings, interdepartmental case discussions etc.)			
2.	Are there agenda available?			
3.	Is there space available for interactions (e.g. meeting rooms)?			
4.	Is there a regular time schedule for any interaction? Which ones?			
5.	Is record keeping on engagement satisfactory?			
6.	Is any information shared facility-wide regularly? (electronic/paper based)			
7.	How often does it happen?			
8.	When was the last time this was done?			

	HR	Diagnostics	Antibiotic use	IPC
1.	Are there dedicated staff for daily work in these areas?			
2.	How many staff are dedicated or are with protected time for this job?			
3.	What is the designation?			
4.	Is there a designated leader/supervisor for daily activities (other than overall lead)? (designation)			
5.	How many staff are designated to training other staff?			
6.	What are their designations?			

	Training	Diagnostics	Antibiotic use	IPC
1.	Is there at least one staff trained specifically in AMR surveillance/AMU/IPC?			
2.	What is her/his designation?			
3.	Where was this training? (international/national centre of excellence/university higher degree etc.)			
4.	Is there a mechanism for updating his/her knowledge?			
5.	What is it?			
6.	How often does it happen?			
7.	Is there induction training for new staff on these areas?			
8.	Is there written content for this training?			
9.	Is there repeated trainings for existing staff?			
10.	How often does it happen?			
11.	Is there written content for this repeated training?			
12.	Is training recorded/documented?			

	Finance	Diagnostics	Antibiotic use	IPC
1.	Who pays for procurements in these different areas? (Govt/donation/projects/mixed [if mixed, provide percentages])			
2.	Do patients pay for services in these areas? (e.g diagnostic tests, medicines, PPE)			
3.	Is there anyother source that pays for services? (e.g. insurance/charity/other)			

	Supply chain management	Diagnostics	Antibiotic use	IPC
1.	Who makes decision on what is to be procured?			
2.	Which department is responsible for supplies?			
3.	Are there records maintained on procurement, distribution, use?			
4.	Are there stock outs of supplies for diagnosis, antibiotics, IPC supplies? (e.g hand hygiene products,PPE)			
5.	If yes, give two or three examples each and how often			
6.	What would you attribute stock outs to? (lack of funds/unreliable supplier etc. - list all possible)			

	Indicators	Diagnostics	Antibiotic use	IPC
1.	Is there an indicator for performance which is measured?			
2.	How often is this measured?			
3.	When was the last report on performance?			

Information specific to focus areas

In addition to answers on current status, please record information useful for SWOT analyses and that to be explored further during focus group

Diagnostics

Utilisaton

	Question	Additional Detail/Potential Responses	Answer	Notes (* = explore during focus group)
1.	How many blood culture samples are received on an average working day from OP?			*
2.	How many blood culture samples are received on an average working day from IP ?			
3.	How many urine samples are received **for culture** per average working day from OP?			
4.	How many urine samples are received **for culture** per average working day from IP?			
5.	How many other (not blood or urine) samples are received **for culture** per average working day from OP?			
6.	How many other (not blood or urine) samples are received **for culture** per average working day from IP?			
7.	If a patient is suspected of pyelonephritis, how often is culture requested - overall impression?	Always Mostly Occasionally		
8.	Do antenatal women routinely have urine cultures?	Always Mostly Occasionally		
9.	If a patient is suspected of having blood stream infection, how often is blood culture requested?	Always Mostly Occasionally		
10.	What criteria are used for deciding on who gets a culture done (other than clinical indication)?	Patient ability to pay Age of the patient Time of the day All Others (specify)		
11.	What percentage of patients in the OP advised culture, actually get it done?	All Most Some None		
12.	If the answer is anything other than 'all', what could be the reasons?	Money/collection point not accessible etc.		

Collection of samples

	Question	Additional Detail/Potential Responses	Answer	Notes (* = explore during focus group)
1.	Are there guidelines/SOPs for collection of samples?			
2.	Who prepared this?			
3.	When was it last updated?			
4.	Do these guidelines specify when to collect samples (indications)?			
5.	Do these guidelines state which samples are to be collected for specific clincal conditions?			
6.	Do these guidelines describe how to collect different samples for culture?			
7.	What is your impression on completeness and quality of the guidelines?	Good Need a few improvements Need considerable improvement		
8.	Is a copy available at all collection points?			
9.	How good is the adherence to these guidance (your impression based on observation)?			
10.	Is there a standardised request form?			
11.	What is your impression on completeness and quality of the form (not yet used for patients)?	Good Need a few improvements Need considerable improvement		

12.	What information is included in these requests?			
13.	Are these request forms completed fully for each patient?	All Most Some None		
14.	Are the requests computerised?			
15.	Are the samples identified using barcodes at collection?	Yes No		
16.	Are there designated areas for collecting OP samples for microbiology?			
17.	If yes, is the place easily accessible for patients and adequate for purpose?			
18.	Are there designated staff responsible for collection/oversight of different samples in the OP?			
19.	If yes, how many and what category?			
20.	How many doctors present in the OP (during that day) had training for sample collection?			
21.	How many nurses/other staff in the OP involved in sample collection had training in sample collection?			
22.	Are there any records maintained at collection point in the OP? Name them	Patient-related Equipment-related		
23.	What information is included in patient related records maintained at the collection point?	Patient ID Sample collected Date Time Other (specify)		
24.	Is this paper-based or electronic? (specify if electronically linked to the request)			

Temporary storage and transport

	Question	Additional Detail/Potential Responses	Answer	Notes (* = explore during focus group)
1.	Is there adequate facility for temporary storage (e.g. refrigerator, allocated room temperature areas) at the point of collection?			
2.	Is there guidance on temporary storage of samples prior to transport to labs (if applicable to that hospital)?			
3.	What is your impression on completeness and quality of guidance and facility?	Good Need a few improvements Need considerable improvement		
4.	Who brings samples to the laboratory from OP?	Patient relatives Hospital staff Other (specify)		
5.	Who brings samples to the laboratory from IP?			
6.	In your opinion, is the transport system satisfactory (timeliness, temperature specifications, biosafety etc.)?			

Receipt and report - lab

	Question	Additional Detail/Potential Responses	Answer	Notes (* = explore during focus group)
1.	Are there criteria for accepting/rejecting in the lab?			*
2.	What is your impression on completeness and quality of the criteria?	Good Need a few improvements Need considerable improvement		
3.	Are these shared with clinical staff?			
4.	Were the sample collection staff aware of the rejection criteria? (Ask a few staff working on the day)	Fully Partially Not aware		
5.	What is the process if a sample is unacceptable? (rejecting/processing/requesting another sample etc.)			
6.	How many samples are rejected per week? (approx percentage of all received during that week)			
7.	Is there a drug-bug chart for reporting?			
8.	What is your impression on completeness and quality of the drug-bug chart?	Good Need a few improvements Need considerable improvement		
9.	How was this developed?			
10.	Is this always adhered to?			
11.	Do clinical staff receive training on how to choose or change antibiotic based on lab report for individual patients?			

Monitoring and feedback

Answer

	Question	Additional Detail/Potential Responses	Answer	Notes (* = explore during focus group)
1.	Is there an indicator that measures proper collection of samples? (e.g. contamination rates)			
2.	Is there a mechanism by which time elapsed between collection and receipt in the lab is measured?			
3.	Is information on reasons for sample rejection shared with staff collecting samples frequently?			
4.	Is there a mechanism for monitoring timeliness of reporting?			
5.	Is training offered to clinical staff in sample collection and in utilisation of reports?			
6.	Is there a mechanism of feedback to clinical staff on individual patients (sample adequacy, urgent reports etc.)?			

Antibiotic Use

Prescribing

	Question	Additional Detail/Potential Responses	Answer	Notes (* = explore during focus group)
1.	Is indication (clinical diagnosis and not symptom) for antibiotic recorded on IP records?	All Most Some None		*(challenges related to prescribing)
2.	Is indication (clinical diagnosis and not symptom) for antibiotic recorded on OP records?	All Most Some None		
3.	Is the prescribing by generic name of the antibiotic?	Always Mostly Use company names routinely		
4.	Are the **IP** prescriptions complete in terms of strength, dose, duration?	Always Mostly Rarely		
5.	Are the **OP** prescriptions complete in terms of strength, dose, duration?			
6.	Can AMS team members be easily approached by prescribers for timely advice?			
7.	Do clinical-microbiology ward rounds or case discussion happen at least in some wards at least every week?			
8.	Is there a list of restricted antibiotics which need approval by designated AMS member?			
9.	Is antibiotic prescribed for prophylaxis?			
10.	Mention the indications practised in the hospital (trauma/pre-surgery/normal delivery etc.)			

Antibiotic procuring, distributing, dispensing (Pharmacy)

	Question	Additional Detail/Potential Responses	Answer	Notes (* = explore during focus group)
1.	Is there over-the-counter dispensing or is dispensing based only on prescriptions?	Explore further if yes		
2.	How are antibiotics procured?	Govt supply Direct purchase by hospitals Mixed (explain) Other (specify)		
3.	Is the procurement based on an essential medicines list aligned with national/WHO recommendations?			
4.	Is the procurement information computerised or maintained in registers?			
5.	Is cost information on medicines available for analyses, if needed? (paper/electronic)			
6.	Is stock out a problem?			
7.	How many instances of stock out occurred during the last calendar year? Which antibiotics?			
8.	Is the distribution to wards computerised? If yes, is it ward-wide/specialty-wide/other?			
9.	Is the distribution to **OP** computerised? If yes, speciality-wide/other?			
10.	If these are not computerised, are there registers for distribution within the hospital?			
11.	Is dispensing and prescribing linked through computer?			
12.	If yes, which software programme is used?			
13.	If it is not linked, is patient level data collected in the pharmacy? (paper/electronic/none)			

Guidance and SOPs

	Question	Additional Detail/Potential Responses	Answer	Notes (* = explore during focus group)
1.	Are there updated treatment guidelines for **outpatients**? (year of update and reach)	Site National International		
2.	Are there updated treatment guidelines for **inpatients**? (year of update and reach)			
3.	Are there updated treatment guidelines for hospital infections? (year of update and reach)			
4.	Are there guidelines for antibiotic prophylaxis?			
5.	Who prepared these guidelines? (state for each)	Which committee? Where?		
6.	What is your impression on completeness and quality of each guidelines?	Good Need a few improvements Need considerable improvement		
7.	Do all staff involved in patient care have copies/access?	All Most Some None		
8.	In your opinion, how good is adherence to these guidelines?	Specify for each		
9.	Is adherence monitored? (e.g audits)	Yes No How often? Where?		
10.	Does the hospital have a formulary based on national guidelines/WHO EML?			
11.	Do pharmacists interact with prescribers, in any manner, to discusss choice of antibiotics?			
12.	Are there trainings/meetings aimed at reinforcing good antibiotic prescribing practices?			
13.	Are there records/minutes of these interactions?			
14.	What are the current activities of AMS team based on evidence you have seen?			

Utilising local data

	Question	Additional Detail/Potential Responses	Answer	Notes (* = explore during focus group)
1.	Was local resistance data available to inform treatment guidelines during the update?			
2.	Is local resistance data available currently to influence treatment decisions?			
3.	Local antibiogram data is available on which indicator bacteria?			
4.	Local antibiogram data is available on which infections?			
5.	How frequently is local antibiogram data shared with prescribing staff?			
6.	How frequently is local resistance data shared with dispensing staff?			
7.	Does AMS team monitor AMR rates for indicator bacteria? How frequently?			
8.	When was the local antibiogram data last updated?			

Monitoring and feedback

	Question	Additional Detail/Potential Responses	Answer	Notes (* = explore during focus group)
1.	Is procurement data on antibiotics measured and available for the last calendar year?			
2.	Is dispensing data available (either for OP or IP) for the last calendar month?			
3.	Is there a mechanism by which compliance with guidelines is measured?			
4.	Is appropriateness measured by PPS or in any ward/unit by audit?			
5.	Who measures this and who reviews?			
6.	How often is this done?			
7.	When was this last done? Please provide the method and overall findings			
8.	Is there a written protocol for any of these measurements?			
9.	Does AMS team review/audit specific antibiotic therapy/specific infection at least in some wards?			
10.	How often is this done?			
11.	Are there reports of these reviews available?			
12.	Are the findings of audits/measurements/reviews shared with prescribers?			
13.	Are these findings shared with dispensers?			
14.	Is there at least one person proficient in measuring antibiotic use using ATC/DDD method?			
15.	Are there any targets/goals set for use? (e.g. based on WHO AWaRe)			
16.	How is the impact of interventions to improve antibiotic use ever measured?			

IPC (Good IPC limits spread of AMR infections and reduces use of antibiotics) Since this is a vast area, only some critical elements of IPC are assessed in this section

Practise

	Question	Additional Detail/Potential Responses	Answer	Notes (* = explore during focus group)
1.	What are the current activities of this IPC programme, which you have seen?			
2.	How does the microbiology services contribute currently?	Developing policies, guidelines, implementation, recognising hospital pathogens etc.		
3.	How do clinicians see microbiology contributions to IPC? (useful/adequate etc.)			
4.	Is there regular cleaning of all hospital areas based on local guidelines?			

HR

	Question	Additional Detail/Potential Responses	Answer	Notes (* = explore during focus group)
1.	How many full time IPC staff per 250 beds?			
2.	What are the mechanisms of interaction with microbiology department? (meetings[frequency]/computer alerts/others)	Name all applicable		

Guidelines

	Question	Additional Detail/Potential Responses	Answer	Notes (* = explore during focus group)
1.	Do evidence-based, nationally aligned and locally adapted guidelines for IPC exist?			
2.	Do these guidelines address the following and provide last update and reach			
2a.	Aseptic procedures (mention state/national/international)	Yes No Provide last update		
2b.	Prophylactic use of antibiotics	Yes No Provide last update		
3.	What is your impression on completeness and quality of each?	Good Need a few improvements Need considerable improvement		
4.	Are these documents easily accessible for staff and at points of care?			
5.	Is compliance to guidelines measured for any guideline?			
6.	Name the method for measuring compliance to hand hygiene guidance			
7.	How often is compliance measured?			
8.	How is compliance to surgical site infection prevention measured?			

Surveillance

	Question	Additional Detail/Potential Responses	Answer	Notes (* = explore during focus group)
1.	Are hospital-acquired infections monitored in any part of the hospital?			
2.	What is the methodology used?			
3.	Who is responsible for this measurement?			
4.	Is the lab result used for IPC activities currently?	Yes No		
5.	Where is lab data curently most used? (e.g out break alerts, investigations, updating guidance etc)			

Supplies

	Question	Additional Detail/Potential Responses	Answer	Notes (* = explore during focus group)
1.	During your visit, are hand hygiene products available at all points of care?			
2.	During your visit, is relevant PPE available at all points of care?			

Stakeholder interviews and focus group report

Instructions

For full understanding of gaps and opportunities for improvement, key informant interviews and focus group discussions are needed.
From key informant interviews and focus group discussions, tool users will collect information needed to achieve the results listed on the introduction page, including:
-Prioritising,
-Existing assets that can be used to build on,
-What additional resources are needed,
-Practical time lines, and
-Other relevant information.

Tool users should:
-Organise focus groups and interviews with a few key informants from different categories of staff. These include representatives from multidisciplinary committees and those not from committees, including admin, prescribers, dispensers, nursing, microbiology staff - junior and senior.
-Identify key informants - at least two to represent each category mentioned above - with help of local assessors. Interviewers should allow 1 hour per interview and focus on areas that are familiar to the informants. Ideally, at least two assessors can interview, with one primarily responsible for notetaking.
-Identify participants for focus groups with the help of local asessors. It will be good to have 6 to 8 participants who are different from key informants and represent different categories in each group. Plan 2 focus groups for small hospitals and 4 for large hospitals. Allow 2 hours per focus group, and include at least two assessors, with one primarily responsible for notetaking.

Some useful questions are given below; please include others that may have become evident in the previous sections.

Diagnostics

	Questions	**Inference from discussions** (Enter only a summary of your findings/inferences here from all interactions)
1.	What are the clinicians expectations from laboratory services?	
2.	What are the current barriers to requesting cultures? What will help them to send samples for culture when clincially indicated (explore funds, lack of trust in quality of services, timeliness, difficulties with the process, etc.)	
3.	Explore collection, transport, reporting etc. one by one and in detail - including concerns, solutions etc.	
4.	Is there need for improvement in any of these areas?	
5.	What is needed to improve the situation? (training, infrastructure etc.) Explore in some detail	
6.	Are contamination rates reported worrying for you? Why?	
7.	Will diagnostics benefit from clinical engagement?	
8.	Does this area seem suitable for initial activities for clinical engagement? Why?	
9.	What is needed for sustainable improvements?	

Antibiotic Use

	Questions	**Inference from discussions** (Enter only a summary of your findings/inferences here from all interactions)
1.	Is there overuse/underuse/inappropriate antibiotic use in the hospital? (explore where, why, for which infection)	
2.	Is antibiotic prophylaxis practised according to recommendations? (explore use where, what indication, reasons for use, appropriateness, criteria for use etc.)	
3.	Is there timely access to local antibiograms? What are the challenges?	
4.	What are the challenges with prescribing according to guidelines? (explore and prioritise access to guidance, availability of medicines, cost of medicines, pressure from patients, pressure from drug companies etc.)	
5.	Explore dispensing and use aspects for IP (stop orders, changes to antibiotics etc.) and OP (is a full course dispensed? do patients stop when symptoms subside? Etc.)	
6.	Is there a need to change behaviours? Is it possible under current situation? Why?	
7.	What is most likely to change behaviour? (data, training, etc.)	
8.	What interventions are needed - short term, long term?	
9.	What are the challenges with audits and other types of measurements? (explore record keeping, time, training to do audits, any other reasons)	
10.	What will be the best option to measure and audit?	
11.	Will this area benefit from clinical engagement?	
12.	Does this area seem suitable for initial activities for clinical engagement? Why?	
13.	Which ward/OP/infection will benefit most from interventions to improve use?	
14.	Is antibiotic prophylaxis a suitable area for initial interventions?	

IPC

	Questions	Inference from discussions (Enter only a summary of your findings/inferences here from all interactions)
1.	Perceptions on IPC activities in the hospital (is it functioning, accessible, add value, etc.)	
2.	Opinions on hospital infections in specific wards such as ICU, surgical wards, post partum wards, urology etc. (if actual data is not available)	
3.	Explore reasons why infections spread in each ward	
4.	What is needed to improve the situation?	
5.	What data or information do clinicians think would promote good practices towards IPC?	
6.	Will this area benefit from clinical engagement?	
7.	Does this area seem suitable for initial activities for clinical engagement? Why?	
8.	Which intervention will help most in reducing any one or more infection(s)? (surgical site infection, catheter infection/others)	

Analyses and Recommendations

Instructions

This section is for overall impressions and recommendations on the minimum (and additional) objectives, to help implementation.

For each objective, the first question is your impression on strengths, weaknesses, opportunities and threats. See the example for clarification.

The questions thereafter are to understand practical aspects (current status, resources needed, time etc.) related to that objective in the hospital. Please provide enough information to make decisions and start actions as early as possible.

Example

	Strengths that can be used to build on	Weaknesses that need to be addressed	Opportunities for this area	Threats for this area (if any)
Example answers for SWOT	*AMR and AMS are a leadership priority.*	*Medical records incomplete*	*Implementation of AMR surveillance*	*Unstable supply chains*
	IPC programme/committee is active.	*No dedicated staff is available to lead*	*Increasing awareness of AMR*	*Costs of medicines, tests*
	There is enthusiasm for AMS	*The supply of antibiotics is poor.*	*Possibility to add functions to existing IPC*	*Not a priority*
	There is clinical knowledge of AMS	*Clinicians competing priorities, no time*	*Funding available for PPS*	*Too many nonfunctional committees*
	Prescription audit is conducted in one ward. Facility aggregate antibiogram available, Pharmacist involved in AMS activities		*AMR data available to update guidance*	*Clinicians not committed*

1. Multidisciplinary committee with clear TORs, HR and sustainable financing to oversee AMR/AMU/IPC activities (specify which one(s))

	Strengths that can be used to build on	Weaknesses that need to be addressed	Opportunities for this area	Threats for this area (if any)
SWOT Responses (add rows as needed)				

	Additional Questions	Response
1.	Can this objective be completed in the given time frame? (yes/no) rationale	
2.	Is the facility ready to start/update on this activity? (yes/no) rationale	
3.	List the activities needed to complete this objective (none, update TORs, help with implementing TORs, membership, record keeping, admin buy in etc.)	
4.	Who will be responsible for these activities? (name for each activity)	
5.	Is there funding available from institutional funds for this?	
6.	What minimum additional resources are needed? (external expertise, IT support, additional HR etc.)	
7.	How much time (in months) will be needed to complete this activity?	
8.	Suggest one process (based on the activities listed above) and outcome indicator (based on TORs of the committee) for this activity	
9.	Do you think this action will be sustained after the funding period?	
10.	Any other recommendation relevant to implementation and sustainability?	
11.	Any other relevant information?	

2. Measure antibiotic use using one or more methods - PPS, dispensing, audits

	Strengths that can be used to build on	Weaknesses that need to be addressed	Opportunities for this area	Threats for this area (if any)
SWOT Responses (add rows as needed)				

	Additional Questions	Response
1.	Can **WHO PPS** be completed in the given time frame? (yes/no) rationale	
2.	Can **dispensing data** be collected at least two times in the given time frame?	
3.	Can **prescription audit** be carried out at least in two service areas, at least twice during the time available?	

	Activity-specific questions	WHO PPS	Dispensing data	Prescription audit
4.	Is the facility ready to start/complete on this activity? (yes/no) rationale			
5.	List the activities needed to complete this objective (none, update treatment guidelines, train assessors, record keeping, admin buy in, etc.)			
6.	Who will be responsible for these activities? (name for each activity)			
7.	Is there funding available from intuitional funds for this?			
8.	What minimum additional resources are needed? (external expertise, IT support, additional HR, etc.)			
9.	How much time (in months) will be needed to complete this activity?			
10.	Suggest one process (based on the activities listed above) and outcome indicator (e.g.PPS data analysed) for this activity			
11.	Do you think this action will be sustained after the funding period?			
12.	Any other recommendation relevant to implementation and sustainability?			

3. Educate prescribers, dispensers and others involved in antibiotic use and plans to continue education

	Strengths that can be used to build on	Weaknesses that need to be addressed	Opportunities for this area	Threats for this area (if any)
SWOT Responses (add rows as needed)				

	Additional Questions	Response
1.	Can this objective be completed in the given time frame - at least two sessions (physical or online) per category on appropriate antibiotic use, based on local guidance? (yes/no) rationale	
2.	Is the facility ready to start/update on this activity (yes/no) rationale	
3.	List the activities needed to complete this objective (none, develop schedule, modalities, administer training - elearning/paper admin buy in, etc.)	
4.	Who will be responsible for these activities? (name for each activity)	
5.	Is there funding available from institutional funds for this?	
6.	What minimum additional resources are needed? (external expertise, IT support, additional HR, etc.)	
7.	How much time (in months) will be needed to complete this activity?	
8.	Suggest one process (based on the activities listed above) and outcome indicator (e.g. test scores) for this activity	
9.	Do you think this action will be sustained after the funding period?	
10.	Any other recommendation relevant to implementation and sustainability?	

4. Update diagnostic, treatment (including prophylaxis) and IPC guidance and SOPs using local AMR data

	Strengths that can be used to build on	Weaknesses that need to be addressed	Opportunities for this area	Threats for this area (if any)
SWOT Responses (add rows as needed)				

	Additional Questions	Response
1.	Can this objective for all guidelines and SOPs be completed in the given time frame? (yes/no) rationale	
2.	If not all, can treatment and prophylaxis guidelines be updated within the time frame? (yes/no) reason	
3.	Can the diagnostic guidance be updated within the time frame? (yes/no) reason	
4.	Can the IPC guidance updated within the time frame? (yes/no) reason	

	Activity-specific questions	Treatment and prophylaxis	Diagnostics	IPC (which ones)
5.	Is the facility ready to start/update on this activity? (yes/no) rationale - which guideline(s)			
6.	List the activities needed to complete this objective (AMR surveillance data analyses, listing areas where guidance/SOP needed, multidisciplinary developer group, admin buy in, etc.)			
7.	Who will be responsible for these activities? (name for each activity)			
8.	Is there funding available from institutional funds for this?			
9.	What minimum additional resources are needed? (external expertise, IT support, additional HR, etc.)			
10.	How much time (in months) will be needed to complete this activity?			
11.	Suggest one process (based on the activities listed above) and outcome indicator (e.g. completed guideline distributed to staff) for this activity			
12.	Do you think this action will be sustained after the funding period?			
13.	Any other recommendation relevant to implementation and sustainability?			

5. At least one indicator established for diagnostics, antibiotic use and IPC for continued measurement (e.g. contamination rate, HAI due to ESBL bacteria, fall in use of carbapenems, cost of antibiotics purchased tracked)

	Strengths that can be used to build on	Weaknesses that need to be addressed	Opportunities for this area	Threats for this area (if any)
SWOT Responses (add rows as needed)				

	Activity-specific questions	Diagnostics	Antibiotic use	IPC
1.	What is your recommendation for each area?			
2.	What is the indicator for long-term measurement?			
3.	Can this objective - for all focus areas - be completed in the given time frame? (yes/no) rationale			
4.	Can at least one indicator for any area established? (which one?)			
	Is the facility ready to start/update on this activity (yes/no) rationale - information on each area separately			
5.	List the activities needed to complete this objective (discussions to identify best suitable indicator, trial runs, admin buy in, etc.)			
6.	Who will be responsible for these activities? (name for each activity)			
7.	Is there funding available from institutional funds for this?			
8.	What minimum additional resources are needed? (external expertise, IT support, additional HR etc.)			
9.	How much time (in months) will be needed to complete this activity?			
10.	Suggest one process (based on the activities listed above) and outcome indicator (functioning indicator data collection and sharing) for this activity			
11.	Do you think this action will be sustained after the funding period?			
12.	Any other recommendation relevant to implementation and sustainability?			

6. Additional Objectives feasible in the time frame

	Provide details as for minimum objectives	

2. Infection Prevention and Control (IPC) Assessment Tool- Health Facility

Infection Prevention & Control (IPC) Assessment Tool - Health Facility

Facility Name and Address:			**Date:**	
Respondents Name and Designation:				
Assessor Name & Designation:				

A. IPC Assessment Tool - General

Core component 1: Infection Prevention and Control (IPC) program

Question	Answer	Total	Score	Remarks
1. Do you have an IPC program? (Choose one answer)	☐ No	0		
	☐ Yes, without clearly defined objectives	5		
	☐ Yes, with clearly defined objectives and annual activity plan	10		
2. Is the IPC program supported by an IPC team comprising of IPC professionals? (Choose one answer)	☐ No	0		
	☐ Not a team, *only* an IPC focal person	5		
	☐ Yes	10		
3. Does the IPC team have at least one full-time IPC professional or focal person (nurse or doctor working 100% in IPC) available? (Choose one answer)	☐ No IPC professional available	0		
	☐ No, *only* a part-time IPC professional available	2.5		
	☐ Yes, one per > 250 beds	5		
	☐ Yes, one per ≤ 250 beds	10		
4. Does the IPC team or focal person have dedicated time for IPC activities?	☐ No	0		
	☐ Yes	10		
5. Does the IPC team include doctors and nurses, Laboratory representatives, pharmacy representative and biomedical engineer?	☐ No	0		
	☐ Yes but not all key representatives are included	5		
	☐ Yes, all key representatives are included	10		
6. Do you have an IPC committee?	☐ No	0		
	☐ Yes, but not actively supporting IPC team	5		
	☐ Yes and supporting IPC team	10		
7. Are any of the following professional groups represented/included in the IPC committee?				
a. Senior facility leadership (for example, administrative director, chief executive officer [CEO], medical director)	☐ No	0		
	☐ Yes	5		
b. Senior clinical staff (for example, physician, nurse)	☐ No	0		
	☐ Yes	2.5		
c. Facility management (for example, biosafety, waste, and those tasked with addressing water, sanitation, and hygiene [WASH])	☐ No	0		
	☐ Yes	2.5		
8. Do you have clearly defined IPC objectives (that is, in specific critical areas)? (Choose one answer)	☐ No	0		
	☐ Yes, IPC objectives *only*	2.5		
	☐ Yes, Yes, IPC objectives and measurable outcome indicators (that is, adequate measures for improvement)	5		
	☐ Yes, IPC objectives, measurable outcome indicators and set future targets	10		
9. Does the senior facility leadership show clear commitment and support for the IPC programme:				
a. By an allocated budget specifically for the IPC programme (that is, covering IPC activities, including salaries)?	☐ No	0		
	☐ Yes	5		
b. By demonstrable support for IPC objectives and indicators within the facility (for example, at executive level meetings, executive rounds, participation in morbidity and mortality meetings)?	☐ No	0		
	☐ Yes	5		
10. Does your facility have microbiological laboratory support (either present on or off site) for routine day-to-day use? (Choose one answer)	☐ No	0		
	☐ Yes, but not delivering results reliably (timely and of sufficient quality)	5		
	☐ Yes, and delivering results reliably (timely and of sufficient quality)	10		
	Subtotal - 1	**100**	**0**	

Core component 2: Infection Prevention and Control (IPC) guidelines				
Question	**Answer**	**Total**	**Score**	**Remarks**
1. Does your facility have the expertise (an IPC trained doctor or nurse) for developing or adapting guidelines?	☐ No	0		
	☐ Yes	7.5		
2. Does your facility have guidelines available for:				
a. Standard precautions?	☐ No	0		(mention state/national/international)
	☐ Yes	2.5		
b. Hand hygiene?	☐ No	0		(mention state/national/international)
	☐ Yes	2.5		
c. Transmission-based precautions?	☐ No	0		(mention state/national/international)
	☐ Yes	2.5		
d. Outbreak management and preparedness?	☐ No	0		(mention state/national/international)
	☐ Yes	2.5		
e. Prevention of surgical site infection?	☐ No	0		(mention state/national/international)
	☐ Yes	2.5		
f. Prevention of vascular catheter-associated bloodstream infections?	☐ No	0		(mention state/national/international)
	☐ Yes	2.5		
g. Prevention of hospital-acquired pneumonia ([HAP]; all types of HAP, including (but not exclusively) ventilator-associated pneumonia)?	☐ No	0		(mention state/national/international)
	☐ Yes	2.5		
h. Prevention of catheter-associated urinary tract infections?	☐ No	0		(mention state/national/international)
	☐ Yes	2.5		
i. Prevention of transmission of multidrug-resistant (MDR) pathogens?	☐ No	0		(mention state/national/international)
	☐ Yes	2.5		
j. Disinfection and sterilization?	☐ No	0		(mention state/national/international)
	☐ Yes	2.5		
k. Health care worker protection and safety	☐ No	0		(mention state/national/international)
	☐ Yes	2.5		
l. Injection safety?	☐ No	0		(mention state/national/international)
	☐ Yes	2.5		
m. Waste management?	☐ No	0		(mention state/national/international)
	☐ Yes	2.5		
n. Antibiotic stewardship?	☐ No	0		(mention state/national/international)
	☐ Yes	2.5		
3. Are the guidelines in your facility consistent with national guidelines ?	☐ No	0		
	☐ Yes	10		
4. Is implementation of the guidelines adapted according to the local needs and resources while maintaining key IPC standards?	☐ No	0		
	☐ Yes	10		
5. Are frontline health care workers involved in both planning and executing the implementation of IPC guidelines in addition to IPC personnel?	☐ No	0		
	☐ Yes, but partially (either in planning or in implementaion)	5		
	☐ Yes	10		
6. Are relevant stakeholders (for example, lead doctors and nurses, hospital managers, quality management) involved in the development and adaptation of the IPC guidelines in addition to IPC personnel?	☐ No	0		
	☐ Yes	7.5		
7. Do health care workers receive specific training related to new or updated IPC guidelines introduced in the facility?	☐ No	0		
	☐ Yes	10		
8. Do Admirative staff regularly monitor the implementation of the IPC guidelines in your facility?	☐ No	0		
	☐ Yes	10		
	Subtotal - 2	**100**	**0**	

General Comments:

Core component 3: Infection Prevention and Control (IPC) education and training

Question	Answer	Total	Score	Remarks
1. Does your health facility has a designated personnel to conduct IPC trainings??	☐ No	0		
	☐ Yes	10		
2. Are there additional non-IPC personnel with adequate skills to serve as trainers and mentors (for example, link nurses or doctors, champions)? (Choose one answer)	☐ No	0		
	☐ Yes	10		
3. How frequently do health care workers receive training regarding IPC in your facility? (Choose one answer)	☐ Never or rarely	0		
	☐ New employee orientation *only* for health care workers	5		
	☐ New employee orientation and regular (at least annually) IPC training for health care workers offered but not mandatory	10		
	☐ New employee orientation and regular (at least annually) mandatory IPC training for all health care workers	15		
4. How frequently do cleaners and other personnel directly involved in patient care receive training regarding IPC in your facility? (Choose one answer)	☐ Never or rarely	0		
	☐ New employee orientation *only* for other personnel	5		
	☐ New employee orientation and regular (at least annually) training for other personnel offered but not mandatory	10		
	☐ New employee orientation and regular (at least annually) mandatory IPC training for other personnel	15		
5. Does administrative and managerial staff receive general training regarding	☐ No	0		
	☐ Yes	5		
6. How are health care workers and other personnel trained? (Choose one answer)	☐ No training available	0		
	☐ Using written information and/or oral instruction and/or e-learning*only*	5		
	☐ Includes *additional* interactive training sessions (for example, simulation and/or bedside training)	10		
7. Are there periodic evaluations of the effectiveness of training programmes (for example, hand hygiene audits, other checks on knowledge)? (Choose one answer)	☐ No	0		
	☐ Yes, but not regularly	5		
	☐ Yes, regularly (at least annually)	10		
8. Is IPC training integrated in the clinical practice and training of other specialties (for example, training of surgeons involves aspects of IPC)? (Choose one answer)	☐ No	0		
	☐ Yes, in some disciplines	5		
	☐ Yes, in all disciplines	10		
9. Is there specific IPC training for patients or family members to minimize the potential for health care-associated infections (for example, immunosuppressed patients, patients with invasive devices, patients with multidrug-resistant infections)?	☐ No	0		
	☐ Yes	5		
10. Is ongoing development/education offered for IPC staff (for example, by regularly attending conferences, courses)?	☐ No	0		
	☐ Yes	10		
	Subtotal - 3	**100**	**0**	

Core component 4: Health care-associated infection (HAI) surveillance				
Question	**Answer**	**Total**	**Score**	**Remarks**
Organization of surveillance				
1. Is surveillance a defined component of your IPC programme?	☐ No	0		
	☐ Yes	5		
2. Do you have personnel responsible for surveillance activities?	☐ No	0		
	☐ Yes	5		
3. Have the professionals responsible for surveillance activities been trained in basic epidemiology, surveillance and IPC (that is, capacity to oversee surveillance methods, data management and interpretation)?	☐ No	0		
	☐ Yes	5		
4. Do you have informatics/IT support to conduct your surveillance (for example, equipment, mobile technologies, electronic health records)?	☐ No	0		
	☐ Yes	5		
Priorities for surveillance - defined according to the scope of care				
5. Do you go through a prioritization exercise to determine the HAIs to be targeted for surveillance according to the local context (that is, identifying infections that are major causes of morbidity and mortality in the facility)?	☐ No	0		
	☐ Yes	5		
6. In your facility is surveillance conducted for:				
a. Surgical site infections?	☐ No	0		
	☐ Yes	2.5		
b. Device-associated infections (for example, catheter-associated urinary tract infections, central line-associated bloodstream infections, peripheral-line associated bloodstream infections, ventilator-associated pneumonia)?	☐ No	0		
	☐ Yes	2.5		
c. Clinically-defined infections (for example, definitions based only on clinical signs or symptoms in the absence of microbiological testing)?	☐ No	0		
	☐ Yes	2.5		
d. Colonization or infections caused by multidrug-resistant13 pathogens according to your local epidemiological situation?	☐ No	0		
	☐ Yes	2.5		
e. Local priority vaccine preventable diseases (such as AFP ,Measles, Neonatal tetanus, cholera, diphtheria etc)?	☐ No	0		
	☐ Yes	2.5		
f. Infections in vulnerable populations (for example, neonates, intensive care unit, immunocompromised, burn patients)?	☐ No	0		
	☐ Yes	2.5		
g. Infections that may affect health care workers in clinical, laboratory, or other settings (for example, hepatitis B or C, human immunodeficiency virus [HIV], influenza)?	☐ No	0		
	☐ Yes	2.5		
7. Do you regularly evaluate if your surveillance is in line with the current needs and priorities of your facility?	☐ No	0		
	☐ Yes	5		
Methods of surveillance				
8. Do you use reliable surveillance case definitions (defined numerator and denominator according to international definitions [e.g. CDC NHSN/ECDC] or if adapted, through an evidence-based adaptation process and expert consultation?	☐ No	0		
	☐ Yes	5		
9. Do you use standardized data collection methods (for example, active prospective surveillance) according to international surveillance protocols (for example, CDC NHSN/ECDC) or if adapted, through an evidence-based adaptation process and expert consultation?	☐ No	0		
	☐ Yes	5		
10. Do you have processes in place to regularly review data quality (for example, assessment of case report forms, review of microbiology results, denominator determination, etc.)?	☐ No	0		
	☐ Yes	5		
11. Do you have adequate microbiology and laboratory capacity to support surveillance? (Choose one answer)	☐ No	0		
	☐ Yes, can differentiate gram-positive/negative strains<u>but</u> cannot identify pathogens	2.5		
	☐ Yes, can reliably identify pathogens (for example, isolate identification) in a timely manner	5		
	☐ Yes, can reliably identify pathogens<u>and</u> antimicrobial drug resistance patterns (that is, susceptibilities) in a timely manner	10		
Information analysis and dissemination/data use, linkage, and governance				
12. Are surveillance data used to make tailored unit/facility-based plans for the improvement of IPC practices?	☐ No	0		
	☐ Yes	5		
13. Do you analyze antimicrobial drug resistance on a regular basis (for example, quarterly/half-yearly/annually)?	☐ No	0		
	☐ Yes	5		
14. Do you regularly (for example, quarterly/half-yearly/annually) feedback up-to-date surveillance information to:				
a. Frontline health care workers (doctors/nurses)?	☐ No	0		
	☐ Yes	2.5		
b. Clinical leaders/heads of department	☐ No	0		
	☐ Yes	2.5		
c. IPC committee	☐ No	0		
	☐ Yes	2.5		
d. Non-clinical management/administration (chief executive officer/chief financial officer)?	☐ No	0		
	☐ Yes	2.5		
15. How do you feedback up-to-date surveillance information? (at least annually) (Choose one answer)	☐ Yes	2.5		
	☐ No feedback	0		
	☐ By written/oral information *only*	2.5		
	☐ By written information that also include presentation and interactive problem-oriented solution finding	7.5		
	Subtotal - 4	**100**	**0**	

Core component 5: Multimodal strategiefor implementation of infection prevention and control (IPC) interventions				
Question	**Answer**	**Total**	**Score**	**Remarks**
1. Do you use multimodal strategies to implement IPC interventions? (Use of multiple approaches for example, education and training, infrastructure, M&E, Communication, Safety, and cultural change, supporting IPC interventions)	☐ No	0		
	☐ Yes	15		
2. Do your multimodal strategies include any or all of the following elements:	**System change**			
a. Choose one answer (the most accurate) per element	☐ Element not included in multimodal strategies	0		
	☐ Interventions to ensure the necessary infrastructure and continuous availability of supplies are in place	5		
	☐ Interventions to ensure the necessary infrastructure and continuous availability of supplies are in placeand addressing ergonomics17 and accessibility, such as the best placement of central venous catheter set and tray	10		
b. Choose one answer (the most accurate) per element	**Education and training**			
	☐Element not included in multimodal strategies	0		
	☐ Written information and/or oral instruction and/or e-learning*only*	5		
	☐ *Additional* interactive training sessions (includes simulation and/or bedside training)	10		
c. Choose one answer (the most accurate) per element	**Monitoring and feedback**			
	☐ Element not included in multimodal strategies	0		
	☐ Monitoring compliance with process or outcome indicators (for example, audits of hand hygiene or catheter practices)	5		
	☐ Monitoring compliance and providing timely feedback of monitoring results to health care workers and key players	10		
d. Choose one answer (the most accurate) per element	**Communications and reminders**			
	☐ Element not included in multimodal strategies	0		
	☐ Reminders, posters, or other advocacy/awareness-raising tools to promote the intervention	5		
	☐ *Additional* methods/initiatives to improve team communication across units and disciplines (for example, by establishing regular case conferences and feedback rounds)	10		
e. Choose one answer (the most accurate) per element	**Safety climate and culture change**			
	☐ Element not included in multimodal strategies	0		
	☐ Managers/leaders show visible support and act as champions and role models, promoting an adaptive approach18 and strengthening a culture that supports IPC, patient safety and quality	5		
	☐ *Additionally*, teams and individuals are empowered so that they perceive ownership of the intervention (for example, by participatory feedback rounds)	10		
3. Is a multidisciplinary team used to implement IPC multimodal strategies?	☐ No	0		
	☐ Yes - Passive	10		
	☐ Yes - Active	15		
4. Do you regularly link to colleagues from quality improvement and patient safety to develop and promote IPC	☐ No	0		
	☐ Yes - Need basis	5		
	☐ Yes - Regular	10		
5. Do these strategies include bundlesor checklists?	☐ No	0		
	☐ Yes	10		
	Subtotal - 5	**100**	**0**	

Core component 6: Monitoring/audit of IPC practices and feedback				
Question	**Answer**	**Total**	**Score**	**Remarks**
1. Do you have trained personnel responsible for monitoring/audit of IPC practices and feedback?	☐ No	0		
	☐ Yes - Dedidcated person available, but no regular audit	5		
	☐ Yes - Regular	10		
2. Do you have a well-defined monitoring plan with clear goals, targets and activities (including tools to collect data in a systematic way)?	☐ No	0		
	☐ Yes	7.5		
3. Which processes and indicators do you monitor in your facility? Tick all that apply	☐ None	0		
	☐ Hand hygiene compliance (using the WHO hand hygiene observation tool20 or equivalent)	5		
	☐ Intravascular catheter insertion and/or care	5		
	☐ Wound dressing change	5		
	☐ Transmission-based precautions and isolation to prevent the spread of multidrug resistant organisms (MDRO)	5		
	☐ Cleaning of the ward environment	5		
	☐ Disinfection and sterilization of medical equipment/instruments	5		
	☐ Consumption/usage of alcohol-based hand rub or soap	5		
	☐ Consumption/usage of antimicrobial agents	5		
	☐ Waste management	5		
4. How frequently is the WHO Hand Hygiene Self-Assessment Framework Survey undertaken?	☐ Never	0		
	☐ Periodically, but no regular schedule	2.5		
	☐ At least annually	5		
5. Do you feedback auditing reports (for example, feedback on hand hygiene compliance data or other processes) on the state of the IPC activities/performance?	☐ No reporting	0		
	☐ Yes, within the IPC team	2.5		
	☐ Yes, to department leaders and managers in the areas being audited	2.5		
	☐ Yes, to frontline health care workers	2.5		
	☐ Yes, to the IPC committee or quality of care committees or equivalent	2.5		
	☐ Yes, to hospital management and senior administration	2.5		
6. Is the reporting of monitoring data undertaken regularly (at least annually)?	☐ No	0		
	☐ Yes	10		
7. Are monitoring and feedback of IPC processes and indicators performed in a "blame-free" institutional culture aimed at improvement and behavioural change?	☐ No	0		
	☐ Yes	5		
8. Do you assess safety cultural factors in your facility (for example, by using other surveys such as hospital survey on patient safety culture etc)	☐ No	0		
	☐ Yes	5		
	Subtotal - 6	**100**	**0**	

Core component 7: Workload, staffing and bed occupancy				
Question	**Answer**	**Total**	**Score**	
Staffing				
1. Does your health facility has assessed adequate staff need as per patient load? (If yes, please explain the tool used).	☐ No	0		
	☐ Yes	5		
2. Is an agreed (that is, WHO or national) ratio of health care workers to patients maintained across your facility?	☐ No	0		
	☐ Yes, for staff in less than 50% of units	5		
	☐ Yes, for staff in more than 50% of units	10		
	☐ Yes, for all health care workers in the facility	15		
3. Is a system in place in your facility to act on the results of the staffing needs assessments when staffing levels are deemed to be too low?	☐ No	0		
	☐ Yes, If Yes, please explain the system.	10		
Bed Occupancy				
4. Is the design of wards in your facility in accordance with National standards regarding bed capacity?	☐ No	0		
	☐ Yes, but *only* in certain departments	5		
	☐ Yes, for all departments (including emergency department and pediatrics)	15		
5. Is bed occupancy in your facility kept to one patient per bed? (Choose one answer)	☐ No	0		
	☐ Yes, but *only* in certain departments	5		
	☐ Yes, for all units (including emergency departments and pediatrics)	15		
6. Are patients in your facility placed in beds standing in the corridor outside of the room (including beds in the	☐ Yes, more frequently than twice a week	0		
	☐ Yes, less frequently than twice a week	5		
	☐ No	15		
7. Is adequate spacing of > 1 meter between patient beds ensured in your facility?	☐ No	0		
	☐ Yes, but *only* in certain departments	5		
	☐ Yes, for all departments (including emergency department and pediatrics)	15		
8. Is a system in place in your facility to assess and respond when adequate bed capacity is exceeded?	☐ No	0		
	☐ Yes, this is the responsibility of the head of department	5		
	☐ Yes, this is the responsibility of the hospital administration/ management	10		
	Subtotal - 7	**100**	**0**	

Core component 8: Built environment, materials and equipment for IPC at the facility level				
Question	**Answer**	**Total**	**Score**	**Remarks**
Water				
1. Are water services available at all times and of sufficient quantity for all uses (for example, hand washing, drinking, personal hygiene, medical activities, sterilization, decontamination, cleaning and laundry)? (Choose one answer)	☐ No, available on average < 5 days per week	0		
	☐ Yes, available on average ≥ 5 days per week or every day but not of sufficient quantity	2.5		
	☐ Yes, every day and of sufficient quantity	7.5		
2. Is a reliable safe drinking water station present and accessible for staff, patients and families at all times and in all locations/wards? (Choose one answer)	☐ No, not available	0		
	☐ Sometimes, or only in some places or not available for all users	2.5		
	☐ Yes, accessible at all times and for all wards/groups	7.5		
Hand hygiene and sanitation facilities				
3. Are functioning hand hygiene stations (that is, alcohol-based handrub solution or soap and water and clean single-use towels) available at all points of care? (Choose one answer)	☐ No, not present	0		
	☐ Yes, stations present but supplies are not reliably available	2.5		
	☐ Yes, with reliably available supplies	7.5		
4. In your facility, are ≥ 4 toilets or improved latrines available for outpatient settings or ≥ 1 per 20 users for inpatient settings? (Choose one answer)	☐ Less than required number of toilets or latrines available and functioning	0		
	☐ Sufficient number present but not all functioning	2.5		
	☐ Sufficient number present and functioning	7.5		
Power supply, ventilation and cleaning				
5. In your health care facility, is sufficient energy/power supply available at day and night for all uses (for example, pumping and boiling water, sterilization and decontamination, incineration or alternative treatment technologies, electronic medical devices, general lighting of areas where health care procedures are performed to ensure safe provision of health care and lighting of toilet facilities and showers)? (Choose one answer)	☐ No	0		
	☐ Yes, sometimes or only in some of the mentioned areas	2.5		
	☐ Yes, always and in all mentioned areas	5		
6. Is functioning environmental ventilation (natural or mechanical) available in patient care areas?	☐ No	0		
	☐ Yes	5		
7. For floors and horizontal work surfaces, is there an accessible record of cleaning, signed by the cleaners each day? (Choose one answer)	☐ No record of floors and surfaces being cleaned	0		
	☐ Record exists, but is not completed and signed daily or is outdated	2.5		
	☐ Yes, record completed and signed daily	5		
8. Are appropriate and well-maintained materials for cleaning (for example, detergent, mops, buckets, etc.) available? (Choose one answer)	☐ No materials available	0		
	☐ Yes, available but not well maintained	2.5		
	☐ Yes, available and well-maintained	5		
Patient placement and personal protective equipment (PPE) in health care settings				
9. Do you have single patient rooms or rooms for cohorting patients with similar pathogens if the number of isolation rooms is insufficient (for example, TB, measles, cholera, Ebola, SARS)? (Choose one answer)	☐ No	0		
	☐ No single rooms but rather rooms suitable for patient cohorting available	2.5		
	☐ Yes, single rooms are available	7.5		
10. Is PPE available at all times and in sufficient quantity for all uses for all health care workers?	☐ No	0		
	☐ Yes, but not continuously available in sufficient quantities	2.5		
	☐ Yes, continuously available in sufficient quantities	7.5		
Medical waste management and sewage				
11. Do you have functional waste collection containers for non-infectious (general) waste, infectious waste and, sharps waste in close proximity to all waste generation points? (Choose one answer)	☐ No bins or separate sharps disposal	0		
	☐ Separate bins present but lids missing or more than 3/4 full; only two bins (instead of three); or bins at some but not all waste generation points	2.5		
	☐ Yes	5		
12. Is a functional burial pit/fenced waste dump or municipal pick-up available for disposal of non-infectious (non-hazardous/ general waste)? (Choose one answer)	☐ No pit or other disposal method used	0		
	☐ Pit in facility but insufficient dimensions; pits/dumps overfilled or not fenced/locked; or irregular municipal waste pick up	2.5		
	☐ Yes	5		
13. Is an incinerator or alternative treatment technology for the treatment of infectious and sharp waste (for example, an autoclave) present (either present on or off site and operated by a licensed waste management service), functional and of a sufficient capacity? (Choose one answer)	☐ No, none present	0		
	☐ Present, but not functional	2.5		
	☐ Yes	5		
14. Is a wastewater treatment system (for example, septic tank followed by drainage pit) present (either on or off site) and functioning reliably? (Choose one answer)	☐ No, not present	0		
	☐ Yes, but not functioning reliably	2.5		
	☐ Yes and functioning reliably	5		
Decontamination and sterilization				
15. Does your health care facility provide a dedicated decontamination area and/or sterile supply department (either present on or off site and operated by a licensed decontamination management service) for the decontamination and sterilization of medical devices and other items/equipment? (Choose one answer)	☐ No, not present	0		
	☐ Yes, but not functioning reliably	2.5		
	☐ Yes and functioning reliably	5		
16. Do you reliably have sterile and disinfected equipment ready for use? (Choose one answer)	☐ No, available on average < five days per week	0		
	☐ Yes, available on average ≥ five days per week or every day, but not of sufficient quantity	2.5		
	☐ Yes, available every day and of sufficient quantity	5		
17. Are disposable items available when necessary? (for example, injection safety devices, examination gloves) (Choose one answer)	☐ No, not available	0		
	☐ Yes, but *only* sometimes available	2.5		
	☐ Yes, continuously available	5		
	Subtotal - 8	**100**	**0**	

Section A: Summary of Component wise scoring	Total		Percentage
IPC Program	100	0	0
IPC Guidelines	100	0	0
IPC Education and Training	100	0	0
HAIs Surveillance	100	0	0
Multimodal strategies for IPC Interventions	100	0	0
Monitoring/audit of IPC practices and feedback	100	0	0
Workload, staffing and bed occupancy	100	0	0
Built environment, materials and equipment for IPC	100	0	0
Grand Total	**800**	**0**	**0.00**
Grading			

Grading Criteria - General IPC	
Total Score (range)	**IPC Level**
0 – 200	Inadequate
201 - 400	Basic
401 - 600	Intermediate
601 - 800	Advanced

3. Laboratory Assessment Tool

DIAGNOSTIC STEWARDSHIP THROUGH CLINICAL ENGAGEMENT

"0": No; "1": Yes; "p": partial; "na": not applicable

A. Site Details and Clinical Information				
In this section we aim to understand the basic practices and procedures that guide specimen collection and collection of clinical data, and how the laboratory and clinical services interact				
A1. Surveillance site details		0, 1, p, na	**Answers or comments**	
Name				
Address				
Location *(geolocation in decimal degrees)*				
Laboratory Category (Enter"1" in the grey column next to the type of hospital. Enter "0" for the others that don't apply)	District Hospital		Number of beds	
	Regional Hospital		Average monthly **Inpatients**	
	Teaching Hospital		Average monthly **Outpatients**	
	Reference Laboratory		Estimated population covered	
Website				
Contact Name				
Position (e.g. Hospital Manager)				
Telephone				
Email				
Additional contact name (e.g. Microbiology Laboratory Manager)				
Position				
Telephone				
Email				
Surveillance site category (Enter"1" in the grey column next to the type of surveillance site. Enter "0" for the others that don't apply)	Government			
	Private		If private, please specify whether for profit or not for profit	
	Academic institution			
	NGO			
	Religious institution			
How is the hospital funded? (Enter"1" in the column next to the type of hospital. Enter "0" for the others that don't apply)	Government		If there are multiple sources, please specify approximate % for each	
	Private			
	Charitable			
	NGO			
How is the laboratory funded?	Under hospital budget			
	Separate laboratory budget (e.g. direct from treasury)		If yes, please specify the source	
Who pays for the diagnostic test?	Patient / users fees		If there are multiple sources, please specify approximate % for each	
	Hospital			
	Other (e.g. charitable, research)			

A1.1 Collaborations	0, 1, p, na	
Does your laboratory collaborate with other laboratories for research or surveillance? If yes, please enter details.		
Does the laboratory participate in research activities related to AMR?		Please specify the leading institution (if different from the hospital) and the type of collaboration
Is the laboratory part of a surveillance network (either collecting from other sites or sending samples to a referral centre)?		If yes please briefly describe the surveillance network
List international and/or national institutions that have provided support in the past 5 years for **AMR, AST or bacteriology,** with a brief description of the type of support and/or training provided and the years in which it was provided. Add additional rows if required.		
Name of institution:		
Years:		
Describe support:		
Name of institution:		
Years:		

A2 Clinical surveillance				
A2.1 Clinical information and sample request form		**0, 1, p, na**	**Answers or comments**	
Is patient information collected, e.g. at admission or when sample is taken?				
If patient information is collected, which of the following are recorded on the request form? *(if no information is collected enter "na")*	Inpatient / Outpatient			
	Patient Unique Identification number			
	Date of admission			
	Name			
	Date of birth			
	Age			
	Gender			
	Other		Please specify	
How is clinical data related to the sample collected?	No information collected			
	On paper forms			
	Electronic data entry		Please specify platform (e.g. HMIS DMIS2 or other)	
Which of the following are recorded on the sample request form?	Specimen type			
	Date of specimen collection			
	Antimicrobial treatment			
	Heart rate			
	Blood pressure			
	Temperature			
	Respiratory rate			
	Glasgow Coma Scale			
How is the clinical syndrome recorded on the sample request form?	Not recorded			
	Entered as free text			
	Chosen from list of syndromes (e.g. tick list)			
	Standardised case definitions		Please specify (e.g. ICD-11)	
Is any other information recorded?			Please specify	
How are sample requests submitted?	On paper form			
	Electronic data entry		Please specify platform (database, HMIS,LIMS, other)	

A2.2 Specimen collection		**0, 1, p, na**		
Blood sample				
Is blood collected at the surveillance site **for bacterial culture?**			Average number of blood cultures processed per month	
If yes, who draws blood for culture (check all that apply)?	Clinical officer / physician assistant			
	Doctors			
	Laboratory technician			
	Nurse			
	Phlebotomist			
	Other		Please specify	
Does the hospital provide training for blood culture collection?			If yes please specify frequency	
Is the amount of blood collected in a culture quantified (e.g. by checking volume or weight)?			If yes please describe how (volume / weight)	
Urine specimens				
Is urine collected at the surveillance site **for bacterial culture?**			Average number of samples processed per month	
If yes, are instructions provided for patients for collection of midstream ("clean catch") urine?				
Stool specimens				
Is stool collected at the surveillance site **for bacterial culture?**			Average number of samples processed per month	
Genital specimens				
Are urethral or cervical swabs collected at the surveillance site?			Average number of samples processed per month	
Are these samples sent for bacterial culture?			Specify organisms tested	
Are these samples sent for nucleic acid amplification testing (Naas)?			Specify organisms tested	
Sputum samples for TB				
Is sputum collected at the surveillance site **for TB testing?**			Average number of samples processed per month	
How are the samples tested?	Direct microscopy (ZN staining or fluorescent staining)			
	Molecular testing (e.g. Cepheid)			
	Mycobacterial culture			
What safety measures are in place for processing suspected or confirmed TB samples?	Biosafety level 3 laboratory			
	Dedicated biosafety cabinet for processing samples with suspected or confirmed TB			
	No additional safety measures			
Other specimens collected for bacterial culture				
CSF			Average number of samples processed per month	
Wound swabs or pus			Average number of samples processed per month	
Sterile sites (e.g. pleural aspirates, joint aspirates)			Average number of samples processed per month	
Other			Please specify	

A3. Communication and reporting of AMR diagnostic results				
A3.1 Interaction between bacteriology laboratory and clinicians		**0, 1, p, na**		
How are microbiology results reported to the clinical teams?	Via LIMS			
	Paper report sent to ward / clinic			
	Other (e.g. text, WhatsApp)		Please specify	
	Not reported			
When are results reported to clinical teams?	Report only issued when full identification / susceptibilities are complete			
	Interim reporting once identification complete prior to releasing AST results			
	Interim reporting of Gram stain result when bottle flags positive		Specify how (e.g. phone call, LIMS, text message)	
	None other than reporting as above			
What forms of clinical liaison exist (i.e. contact between microbiology laboratory and physicians)? *Enter "1" for all that apply*	Interpretative/advisory comments on selected results (e.g. "Probable contaminant", MRSA or ESBL flag)			
	Ad hoc interactions e.g. ward clinicians requesting additional testing			
	Laboratory personnel attend clinical meetings (please give further details e.g. frequency, adult, paediatric)			
	Clinical microbiologist providing responsive advice (i.e. responding to queries from ward teams)			
	Clinical microbiologist providing active blood culture consult service			
	Regular laboratory rounds - indicate frequency and personnel, e.g. clinical microbiologist, physician, infection control, pharmacy			
	Other - please give details			
Any other engagement activities			Please give details (e.g. combined teaching or CPD sessions, medical student teaching)	

A3.2 Data Sharing outside the hospital		**0, 1, p, na**		
Does the laboratory share AMR data with the National Reference Laboratory or with a surveillance network?				
If yes, how is the information shared? Specify frequency of reporting (weekly, monthly, quarterly, yearly)	Verbal reports		Frequency	
	Written report e.g. via email		Frequency	
	Formal reporting system		Frequency	
If yes, what information is communicated?	Pathogens only			
	Pathogen and AST results			
	Suspected mechanisms of resistance or unusual resistance patterns			

A4. Surveillance and management of Antimicrobial Use 0, 1, p, na				
Does the Hospital/pharmacy collect information on Antimicrobial Use (AMU)?				
If yes, do you report this information to the Ministry of Health or other national body?			Please describe:	
What information is collected / reported for AMU?	List of medicines using Anatomical Therapeutic Chemical index (ATC)			
	Number of Defined Daily Doses (DDD)			
	Number of packages per month			
	Route of administration			
	Product origin			
Do patients access antibiotics from sources outside the hospital pharmacy? (e.g. private pharmacies, non-pharmacy sources)				
Does the hospital have an AMR committee or Antimicrobial Stewardship committee (or similar group)				
If yes, is this a formal group with ToRs, providing regular reports? Please give details				
What is the composition of this committee?				
Additional Comments				

B. Laboratory Human Resource

This section describes the general organisation of the laboratory, and aims to identify needs for training

B1. Human Resources	0, 1, p, na	Answers or comments	
Describe the composition of the Laboratory staff involved in bacterial culture and / or AST		**Number of staff in each category**	**Highest qualification (PhD, masters, BSc etc)**
Laboratory Manager			
Laboratory technician trained in clinical bacteriology			
Administration support			
IT support			
Quality Assurance manager			
Laboratory technician trained in molecular bacteriology			
Other (please specify)			
Trainings and training needs			
Does the facility have HR policies on in-service training? Yes		Please describe	
Does the facility have HR policies on in-service training? No		If no, how are staff kept up to date?	
If training is provided by the facility		Please give further details: onsite / offsite / online; name of course(s); all staff or selected staff etc.	
		Which partner or institution provides or helps with training?	
Please list any additional training needs which can't be met in-house and where external expertise would be required		Description of the training needs	

C. AMR Diagnostic Capabilities

This section aims to understand the capacity for bacterial culture, bacterial identification, and performing antimicrobial susceptibility testing. This section also explores how the quality of the tests is controlled and what support is required to provide or enhance diagnostic services in the clinical microbiology laboratory.

C1. Pathogen Isolation and Identification	0, 1, p, na	Answers or comments	
C1.1 Media and Agar plate Quality Control			
Is the media prepared in a dedicated room separated from the main laboratory?			
Is the autoclave capacity in the laboratory sufficient for routine plate and media preparation		Specify autoclave capacity (litres of media processed/ cycle)	
Does the laboratory monitor the sterilization process?			
If yes what, method is used? Temperature/pressure reading from the autoclave			
If yes what, method is used? Chemical (autoclave tape)			
If yes what, method is used? Biological			
Does the laboratory monitor the pH of the media?			
If yes, what method is used? pH paper or test strips			
If yes, what method is used? pH meter			
Does the laboratory use sheep blood for BA plates?		What is the source of sheep blood (e.g. imported, locally sourced, vet lab)?	
Is the supply of sheep blood reliable? Please give details.			
If sheep blood is not used, what is the source of blood?			
Does the laboratory control for plate sterility?		Give details	
Does the laboratory control for positive growth?		Please indicate which strains are used with which media	
Does the laboratory control for plate thickness?		Specify average plate thickness (in mm) or average number of plates for 500 mL	
What is the average length of time that plates are stored at 4°C?			
What type of petri dish is used in the laboratory? Glass			
What type of petri dish is used in the laboratory? Disposable plastic			
What type of petri dish is used in the laboratory? Reusable plastic			

C1.2 Pathogen isolation 0, 1, p, na				
Does the laboratory reject inadequate specimens?			If yes, specify rejection criteria and indicate approximate number of rejected specimens / month	
Manual Blood Culture				
Does the laboratory perform manual blood culture?				
If yes, please specify if media is prepared in house or sourced externally (specify brand)				
Automated Blood Culture Systems		**0, 1, 2, 3**		
Does your laboratory have a functional automated blood culture system (e.g. BACTEC, BacT/Alert). Enter "0" for no, "1" for instrument in place but no service plan or QC monitoring, "2" for instrument with service plan but no QC monitoring,"3" for instrument with service plan and QC monitoring			Specify make, model and capacity	
Blood culture QC				
How many days do you incubate blood culture bottles before reporting them as "No growth"?			Specify number of days	
What is the average % of positive blood cultures?			Specify %	
What is the blood culture contamination rate ?	Children		Specify %	
	Adults		Specify %	
Please describe the any interventions aimed at reducing contamination				
Urine culture				
Does the laboratory need calibrated inoculation loops (e.g. 1/2/10 µl) for streaking UTI plates?				
Are quantitive / semi-quantitive cultures performed based on Colony Forming Units /ml? How does this influence the final report?				
Is rate of contamination recorded for urine specimens?				
Fastidious organisms				
Is the laboratory able to grow and identify *Haemophilus sp?*			Please describe the method used	
Is the laboratory able to grow and identify *Neisseria gonorrhoeae ?*			Please describe the method used	
Is the laboratory able to grow and identify *Streptococcus pneumoniae?*			Please describe the method used	
Is the laboratory able to grow and identify *Neisseria meningitidis safely (including at biosafety level 2)?*			Please describe the method used	
Is the laboratory able to grow and identify *Campylobacter spp?*			Please describe the method used	
Anaerobic culture				
Is the laboratory able to grow and identify anaerobic bacteria?			Please describe the method used and the common species identified	
Storage of bacterial isolates				
Are bacterial isolates stored at the facility?				
If yes, what are the criteria used to select bacterial isolates for storage?				
What is the method of storage?	Frozen at -80C		Give details (beads or glycerol)	
	Agar slopes / stabs			
	Freeze dried			
Are isolates send to a reference laboratory for species confirmation?			Specify referral criteria	
Additional comments				

C1.3 Pathogen identification				
Are SOPs or benchtop flowcharts for pathogen ID available in the laboratory?				
What is the source of the algorithm used for organism ID? (check all that apply)	Developed in-house from textbooks			
	National guideline		Details	
	International guideline (e.g. UK Standard for Microbiology Investigation		Details	
	Developed in-house by consultants / collaborations		Details	
What methods are routinely used for bacterial identification? (check all that apply)	Gram staining			
	Individual biochemical tests (e.g. indole, coagulase test etc...)			
	Commercial identification kits (e.g. API; RapID ONE)		Please specify	
	Chromogenic Agar			
	Other (Specify):			
Does the laboratory perform serotyping?				
If yes, please indicate which organisms are serotyped	*E. coli*			
	Streptococci			
	N. meningitidis			
	Salmonella			
	Shigella			
Does the laboratory use an automated bacterial identification / AST system?				
Please indicate which system(s) is / are in place, and whether appropriate service plans and QC are in place. Enter "0" for no instrument, "1" for instrument in place but no service plan or QC monitoring, "2" for instrument with service plan but no QC monitoring,"3" for instrument with service plan and QC monitoring	Phoenix (BD)			
	Vitek 2 (Biomerieux)			
	Microscan (Beckman Coulter)			
	Sensititer (ThermoFisher)			
	MALDI TOF (*)			
	Other		Specify make and model	
Does the laboratory experience stockouts for the reagents required to run these instruments?				

C2. Antimicrobial Susceptibility Testing (AST) 0, 1, p, na				
C2.1. Perfomance of AST				
Does the laboratory perform AST? (If no, go straight to section D)			Estimate number of organisms tested / month	
What are the criteria for performing AST on isolates?	AST performed and reported on all organisms			
	AST performed and reported for a specified list of clinically relevant organisms			
	AST performed only if requested by clinician			
	Other		Give details	
What methods are used for determining antimicrobial susceptibility?	MIC determination		Please specify (Agar/ broth dilution, gradient strip)	
	Disk diffusion			
	Automated method (Vitek; Phoenix; Microscan)		Specify which	
Which standard method is used for AST ?	No standard used			
	CLSI		specify year of standard available in the laboratory	
	EUCAST			
	OIE			
	SFM			
	National standard			
	Any other (please specify)			
Are control strains used for AST validation?				
If yes please indicate which strains are available and the source (ATCC, Oxoid, other commercial source)	*E.coli* ATCC 25922			
	Pseudomonas aeruginosa ATCC 27853			
	Streptococcus pneumoniae ATCC 49619			
	Klebsiella pneumoniae ATCC 700603			
	Staphylococcus aureus ATCC 25923			
	Neisseria gonorrhoeae ATCC 49226			
	Other strains (specify)			

C2.2. Disk diffusion				
Please indicate which media is used for AST (MH, ISO, other)				
How is inoculum controlled?	Nephelometer			
	Commercial MacFarland standards			
	MacFarland standards prepared in-house			
	Other method (specify)			
	Not controlled			
Does the laboratory experience stockouts for antimicrobial discs?			If yes please specify frequency	
Does the laboratory use disk dispensers? If yes, how many are available in the laboratory?(*)			Number in laboratory	
How are inhibition zones read?	Comparison with standard organism (Stokes method)			
	Diameter measured using ruler / calliper			
	Template			
	Automated measurement			
	Other (specify)			
How are AST results recorded?	Resistant ("R") / Sensitive ("S")			
	Resistant ("R"), Intermediate ("I"), or Sensitive ("S")			
	Resistant ("R") or Sensitive ("S") **+ diameter of inhibition**			
C3. Antimicrobial resistance mechanisms 0, 1, p, na				
C3.1 Phenotypic analysis				
Do you test for ESBL production in Enterobacterales?			Specify method	
Do you test for AmpC type ß lactamase?			Specify method	
Do you test for Carbapenemase resistance?			Specify method	
Do you test for Methicillin resistance for *S. aureus* (MRSA)			Specify method	
If yes are you using S. aureus ATCC 29213 (methicillin susceptible) ATCC 43300 (methicillin resistant) for QC				
Do you test for Vancomycin resistance ?			Specify method	
C3.2. Advanced molecular diagnostic capability for resistance mechanisms				
Does the laboratory perform any molecular resistance testing?				
If yes please specify method	PCR (indicate whether commercial or in-house assay)			
	WGS			
	Microarray			
	Other (specify)			
C4. Management of Quality 0, 1, p, na				
Is the microbiology laboratory accredited or following an accreditation process? (e.g. SLIMTA), GCLP, ISO)			If yes please specify which:	
Does the laboratory or the surveillance site have a Quality Manager				
What is the source of the Quality Assurance documents (i.e. Quality manual, SOPs, guidelines, flowchart)	National guidelines			
	Developed in-house (specify source)			
	Consultants / collaborations			
	Scientific publications			
Does the lab participate in an EQA programme for bacterial identification or AST?			Please give details	
Does the EQA programme include a proficiency testing scheme?			Please indicate which scheme(s)?	
			What were the latest scores for AST / ID for the facility?	
Does the EQA programme include repeat testing of samples by an external laboratory?			Please give details	
Does the EQA programme include validation of processes by an external agency or institution (e.g. observing techniques, checking SOPs)?			Please give details (agency, process)	
Additional Comments				

D. Data Management				
This section looks at how AMR data is stored, what information is extracted from individual AMR data, and how data is communicated outside the laboratory				
D1. Data collection and storage 0, 1, p, na **Answers or comments**				
How are laboratory results stored?	Not stored			
	Paper log books			
	On local computers (e.g. EXCEL or Word file)			
	Using WHONET			
	LIMS system other than WHONET (please specify which)			
Are the laboratory results linked to the patient's clinical data (e.g. by a unique identifier used in a clinical database)? Please give details.				
How often is data entered into the log book or data system?	Daily			
	Weekly			
	Monthly			
	Other		Please specify	
For computerized data storage, how often is the file updated with lab results (daily, weekly, monthly, annually)?				
D2. Data communication				
Does the laboratory share AMR data with a surveillance network or the National Reference laboratory				
How is the information shared? Please indicate frequency	Verbal reports		Frequency	
	Written reports (Email)		Frequency	
	Sending or linking a computer file		Frequency	
	Via WHONET / LIMS		Frequency	
What information is communicated? Check all that apply	Number of samples taken			
	Number of positive samples			
	Number of resistant bacteria			
	GLASS pathogens only			
	Other pathogens - give details			
	Suspected mechanisms of resistance			
	Other information - please give details			
D3. Data analysis				
Are bacterial identification and AST results linked with patient treatment details and clinical outcome (e.g. unique identifier linked with clinical database)?				
Does the laboratory produce a report on AMR? Specify frequency.				
What data is included in the report (e.g. number of test, specimen types, %positive, % SIR, % contamination etc)				
Who is the report shared with?				
Additional Comments				

References

1 Salam MA, Al-Amin MY, Salam MT, Pawar JS, Akhter N, Rabaan AA, Alqumber MAA. Antimicrobial Resistance: A Growing Serious Threat for Global Public Health. Healthcare (Basel). 2023 Jul 5;11(13):1946. doi: 10.3390/healthcare11131946. PMID: 37444780; PMCID: PMC10340576.

2 Septimus EJ. Antimicrobial Resistance: An Antimicrobial/Diagnostic Stewardship and Infection Prevention Approach. Med Clin North Am. 2018 Sep;102(5):819-829. doi: 10.1016/j.mcna.2018.04.005. Epub 2018 Jun 27. PMID: 30126573.

3 Fleming Fund programme receives global award for improving responsible antimicrobial drug use in Pakistan. https://www.flemingfund.org/publications/global-award-for-improving-responsible-antimicrobial-drug-use-in-pakistan/

4 Fleming Fund program receives award for improving responsible drug use in Pakistan. https://www.dai.com/news/fleming-fund-program-receives-award-for-improving-responsible-drug-use-in-pakistan

5 van Weel C, Kassai R, Qidwai W, et al. Primary healthcare policy implementation in South Asia. BMJ Global Health 2016;1:e000057. doi:10.1136/bmjgh-2016- 000057

January 2026

CLINICAL ENGAGEMENT PROGRAM TO COMBAT AMR (CEP4AMR)

TACE ASIA
Technical Assistance For Clinical Engagement

MOTT MACDONALD

The Fleming Fund
Regional Grants

UK International Development
Partnership | Progress | Prosperity