

# A Technical Guide to Learning and Capacity Development to Address Antimicrobial Resistance in MTaPS Countries

Government institutions often have workforces with a mix of abilities to carry out multisectoral coordination (MSC), infection prevention and control (IPC), and antimicrobial stewardship (AMS) programs who may need assistance to implement blended learning solutions that allow them to sustainably build their skills. When selecting capacity-building interventions, an evidence-based approach is important. The traditional approach, where you sit participants down and spend two weeks training them on everything they need to know, is unlikely to be the most efficient way to build capacity. Most adults learn as they interact with peers and solve complex, real-world problems on the job. Blended learning<sup>1</sup> capitalizes on this evidence and maximizes learning, retention, and behavior change.<sup>2</sup> The USAID Medicines, Technologies, and Pharmaceutical Services (MTaPS) Program will support countries in developing, adapting, or enhancing IPC and AMS training packages to incorporate blended learning approaches and use innovative technologies, where applicable, for both in-service and pre-service training programs. However, determining the approaches to blend can be daunting. Before selecting the right approach for a country, ask *Is this the right approach for this country? Is it suitable for this country's context and priorities? Does the country have the technological readiness to support the selected blended approach?* Answering these questions might require a rapid needs and technology assessment.

## Key World Health Organization documents that provide content ideas on AMS, IPC, and MSC

[Health workers' education and training on antimicrobial resistance: curricula guide](#)

[Antimicrobial stewardship: A competency-based approach](#)

[Mapping educational opportunities and resources for health-care workers to learn about antimicrobial resistance and stewardship](#)

[WHO competency framework for health workers' education and training on antimicrobial resistance](#)

[Antimicrobial stewardship programmes in health-care facilities in low- and middle-income countries: A WHO practical toolkit](#)

[Guidelines on core components of infection prevention and control programmes at the national and acute health care facility level](#)

[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](#)

[Tackling antimicrobial resistance \(AMR\) together. Working paper 1.0: Multisectoral coordination](#)

<sup>1</sup> Blended learning combines online learning and traditional classroom (place-based) instruction. The online component can be conducted asynchronously (a self-paced instruction/learning approach where learners can access the content independently at any time or location). This mixture of learning methods fosters optimum retention, application, and behavior change.

<sup>2</sup> The 70-20-10 Model for Learning and Development. <https://trainingindustry.com/wiki/content-development/the-702010-model-for-learning-and-development/>

This mini-guide provides a checklist of the major steps for developing and implementing pre- and in-service training packages, including e-Learning courses, but does not go in detail of the technical areas. The box on the previous page includes key World Health Organization (WHO) documents that can be used to generate technical content in AMS, IPC, and MSC. In-country training institutions and stakeholders can adapt content ideas from these documents or other resources to match local competency needs; types of training (pre- or in-service); and trainees (doctor, nurse, pharmacist, or other health professional). For example, this [resource](#) lists 94 initiatives related to education on antimicrobial resistance (AMR)/AMS, including online and formal courses, guidelines, and outreach materials that can be adapted; WHO published a similar mapping of training programs and resources in 2017 (see [Table A2](#)). Other MTAps mini-guides provide additional information.<sup>3</sup> Critical in-country documents such as the national action plan on AMR, national standard treatment guidelines and essential medicines list, and other country IPC or AMS policies and guidelines should also be consulted to make the curricular content relevant to local context.

## Curriculum Development or Reform

Whether for an in-service or pre-service curriculum, AMR-related curricula development involves taking content from subject matter experts and translating it into effective training packages. Face-to-face training is one of the most commonly used methods for training health care professionals in most low- and middle-income countries (LMICs) for both pre-service and in-service programs. However, face-to-face training cannot succeed without a strong curriculum. The first step in developing such a curriculum often involves appointing a **curriculum development champion** and forming a **curriculum design/development team** comprising subject matter experts and at least one instructional designer (if none exists internally, hire an external consultant with experience in analyze, design, develop, implement, evaluate [ADDIE] methods). Members of the curriculum development team should have the required expertise to cover the scope of the curriculum content. It is important to appoint a final reviewer and approver, who would likely be a national IPC/AMS lead. Once these activities are completed, follow the steps in checklist I.

### Checklist I. Face-to-Face Training Curriculum Development

| Activity  | ☑=Y                             |
|---|---------------------------------|
| <b>Step 1: Hold a curriculum design/development kick off meeting led by the curriculum development champion</b>   | 🟢 Done 🟡 In progress 🔴 Not done |
| <ul style="list-style-type: none"> <li>■ Discuss the purpose of the course and its intended audience</li> <li>■ Discuss roles and responsibilities, deliverables, and timeline (if the curriculum is expected to meet a specific deadline for publishing, clearly communicate it at this meeting to ensure this deadline is met)</li> <li>■ Agree on review process, including conducting phone calls as needed to discuss feedback on drafts and what course edits need to be included in the final version</li> <li>■ Discuss the course development process, including drafts and reviews</li> </ul> | 🟢 Done 🟡 In progress 🔴 Not done |

<sup>3</sup> For example, A Technical Guide to Implementing Facility-Level Antimicrobial Stewardship Programs in MTAps Program Countries, A Technical Guide to Implementing a Continuous Quality Improvement Approach to Strengthen Infection Prevention and Control Programs at Health Facilities in MTAps Program Countries, and A Technical Guide to Strengthening the Multisectoral Coordination Body to Address Antimicrobial Resistance in MTAps Program Countries.

| Activity   | ☑=Y                                    |
|--|--|
| <ul style="list-style-type: none"> <li>■ Identify and agree on final sign offs</li> </ul>  |  |
| <p><b>Step 2: Gather critical information to design the curriculum; instructional designer works with curriculum development team</b></p>  | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Perform a needs analysis to determine if a problem exists that can be appropriately addressed by training. Ask:                             <ul style="list-style-type: none"> <li>○ What performance problems will the training address?</li> <li>○ What indicators will you use to measure success?</li> <li>○ What additional activities to support the training may be required to achieve the desired results?</li> </ul> </li> </ul>  | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Perform an audience analysis to determine who requires the training and their specific needs</li> </ul>   | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Perform an environment analysis</li> </ul>  | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Determine what goals and objectives the training should address</li> </ul>  | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Identify what AMR resources are available for the project</li> </ul>  | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Identify participant learning goals and select instructional objectives</li> </ul>  | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Select and develop the instructional strategies, including developing the sequence and structure of the course</li> </ul>   | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Prepare macro design or course outline</li> </ul>   | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Prepare detailed <b>facilitator guide</b> consisting of introductions and individual session plans (including learning objectives and methodology to be used to implement each session) for workshop delivery to end users/participants. For examples, see <a href="https://apps.who.int/medicinedocs/en/m/abstract/js21052en/">https://apps.who.int/medicinedocs/en/m/abstract/js21052en/</a> and <a href="https://www.who.int/medicines/technical_briefing/tbs/01-TG_DTC-Overview_final-08.pdf?ua=1">https://www.who.int/medicines/technical_briefing/tbs/01-TG_DTC-Overview_final-08.pdf?ua=1</a></li> </ul> | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ <b>Prepare PowerPoint slides</b></li> </ul>   | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Prepare detailed <b>participant guide</b>. This should include participant handouts, job aids, reference materials, case studies, and other materials required to facilitate the workshops. See <a href="https://apps.who.int/medicinedocs/documents/s22115en/s22115en.pdf">https://apps.who.int/medicinedocs/documents/s22115en/s22115en.pdf</a>.</li> </ul>   | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Prepare detailed <b>training of trainers guide</b> consisting of introduction and individual session explanations (including learning objectives and methodology descriptions) to assist trainers in understanding how to deliver the workshop to participants</li> </ul>   | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Develop a program monitoring and evaluation strategy that includes instructional evaluation techniques, assessments, and tasks</li> </ul>   | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Prepare all support materials, including assessment tools, audio, photos, videos, and other media</li> <li>■ The UK's <a href="#">PrescQIPP Antimicrobial Stewardship Webkit</a> includes many resources on IPC and AMS, including videos and fact sheets</li> </ul>  | <p>○ Done ○ In progress ○ Not done</p> |
| <p><b>Step 3: Implement the curriculum. The curriculum development champion works with the curriculum facilitators (sometimes comprising members of the curriculum design/development team)</b></p>  | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Conduct dry run sessions with facilitators or pilot to test the course</li> </ul>   | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Review and revise materials based on pilot evaluation or feedback</li> </ul>  | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Consult with subject matter experts for accuracy of content</li> </ul>  | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Consult with stakeholders to ensure adherence to goals and finalize the curriculum</li> </ul>   | <p>○ Done ○ In progress ○ Not done</p> |

| Activity   | ☑=Y                             |
|--|---------------------------------|
| ■ Produce (print) the curriculum and all instructional materials on your subject matter area, such as IPC, AMS, MSC, or other aspects of AMR containment   | ○ Done ○ In progress ○ Not done |
| ■ Train the trainers on the curriculum   | ○ Done ○ In progress ○ Not done |
| ■ Schedule a venue for instructional sessions  |                                 |
| ■ Deliver instruction  | ○ Done ○ In progress ○ Not done |
| ■ Measure learner satisfaction   | ○ Done ○ In progress ○ Not done |
| ■ Measure learner achievement at the conclusion of instruction   | ○ Done ○ In progress ○ Not done |
| <b>Step 4: Evaluate training to gauge the effectiveness of the curriculum</b>  | ○ Done ○ In progress ○ Not done |
| ■ Measure transfer of learning (i.e., conduct assessment during or immediately after instruction of the curriculum). This includes assessing the performance of instructors via course feedback/evaluation at the end of training program. Refer to Kirkpatrick's <sup>4</sup> four levels of evaluation to develop assessment tool ( <a href="https://www.mindtools.com/pages/article/kirkpatrick.htm">https://www.mindtools.com/pages/article/kirkpatrick.htm</a> or <a href="https://www.lucidchart.com/blog/how-to-use-the-kirkpatrick-evaluation-model/">https://www.lucidchart.com/blog/how-to-use-the-kirkpatrick-evaluation-model/</a> ) | ○ Done ○ In progress ○ Not done |
| ■ Revise, restructure, or improve instructional materials and/or training venue as needed  | ○ Done ○ In progress ○ Not done |

## Pre-Service Curriculum Development Reform

Pre-service training equips health care workers with basic foundational concepts and skills before they enter the workforce. Because many institutions in LMICs do not have AMR as part of their academic curricula, adding AMR components through a curriculum reform process can help ensure a quality pre-service training program. Checklist 2 offers important steps to help initiate AMR pre-service curriculum reform.

Checklist 2. Adding AMR Components to a Training Curriculum<sup>5</sup>

| Activity  | ☑=Y                             |
|---|---------------------------------|
| <b>Step 1: Understand the Context</b>   | ○ Done ○ In progress ○ Not done |
| ■ Analyze the local situation: Gather information for situational analysis: <ul style="list-style-type: none"> <li>○ Previous studies on local AMR-related topics and WHO (2015) Global action plan on antimicrobial resistance (<a href="https://www.who.int/antimicrobial-resistance/global-action-plan/en/">https://www.who.int/antimicrobial-resistance/global-action-plan/en/</a>)</li> <li>○ Local studies on specific medicine use problems, such as prescription and dispensing practices of antibiotics (<a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3565572/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3565572/</a>)</li> </ul> | ○ Done ○ In progress ○ Not done |

<sup>4</sup> Donald Kirkpatrick's (1959) four levels of evaluation—an evidence-based tool for measuring training effectiveness—is a sequential model designed to help trainers objectively evaluate learning programs.

<https://www.kirkpatrickpartners.com/Our-Philosophy/The-Kirkpatrick-Model>.

<sup>5</sup> Systems for Improved Access to Pharmaceuticals and Services (SIAPS). 2013. Revising Preservice Curriculum to Incorporate Rational Medicine Use Topics: A Guide. Submitted to the US Agency for International Development by the SIAPS Program. Arlington, VA: Management Sciences for Health. <http://siapsprogram.org/wp-content/uploads/2013/01/Preservice-Curriculum-Final.pdf>

| Activity   | ☑=Y                                    |
|--|--|
| <ul style="list-style-type: none"> <li>○ Information from household surveys on medicine use and health care-seeking behavior (<a href="https://dhsprogram.com/">https://dhsprogram.com/</a>)</li> <li>○ Incidence of AMR for specific pathogens</li> <li>○ Estimates of the cost of AMR (<a href="https://www.who.int/bulletin/volumes/94/9/16-020916/en/">https://www.who.int/bulletin/volumes/94/9/16-020916/en/</a>)</li> <li>○ AMR-related mortality and morbidity rates</li> <li>○ Self-medication habits</li> <li>○ Pharmaceutical product quality</li> <li>○ Infection control practices</li> <li>○ Reports of adverse drug reactions and other medicine safety issues</li> </ul> |  |
| <ul style="list-style-type: none"> <li>■ Identify stakeholders and inform them of the initiative. When identifying stakeholders, ask:                             <ul style="list-style-type: none"> <li>○ What types of changes will be required in IPC/AMS/MSO or other areas of AMR containment-related content in the curriculum?</li> <li>○ Who is likely to lead the revision, implementation, and use of pre-service AMR curriculum?</li> <li>○ What types of coordination do you need from which stakeholders to be successful?</li> <li>○ What kind of technical expertise will be required to make these changes?</li> </ul> </li> </ul>                                       | <p>○ Done ○ In progress ○ Not done</p> |
| <p><b>Step 2: Establish a champion group</b></p>   | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Recruit members                             <ul style="list-style-type: none"> <li>○ Choose who should be in the champion group</li> <li>○ Choose a leader</li> </ul> </li> </ul>   | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Develop an action plan                             <ul style="list-style-type: none"> <li>○ Conduct a pre-service curriculum assessment</li> <li>○ Design a pre-service AMR curriculum</li> <li>○ Implement</li> </ul> </li> </ul>  | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Set S.M.A.R.T. objectives                             <ul style="list-style-type: none"> <li>○ S = Specific</li> <li>○ M = Measurable</li> <li>○ A = Achievable</li> <li>○ R = Relevant</li> <li>○ T = Time-bound</li> </ul> </li> </ul>  | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Build support among stakeholders</li> </ul>   | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Plan a communications strategy to keep stakeholders informed of progress                             <ul style="list-style-type: none"> <li>○ Ensure everyone involved in the initiative can be contacted and updated</li> <li>○ Set a schedule and method for regular progress updates</li> </ul> </li> </ul>  | <p>○ Done ○ In progress ○ Not done</p> |
| <p><b>Step 3: Assess existing curriculum for AMR content</b></p>   | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Define the assessment methodology</li> </ul>  | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Identify a core team and team leader from the champion group to conduct the curriculum assessment or rapid appraisal</li> </ul>   | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ If necessary, hire a consultant</li> </ul>  | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Identify gaps by looking for any obvious holes in the curriculum</li> </ul>   | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Compare the results of the assessment to the proposed overall objective of the curriculum outlined in the planning stage</li> </ul>   | <p>○ Done ○ In progress ○ Not done</p> |
| <ul style="list-style-type: none"> <li>■ Develop a plan to modify existing content and teaching strategies to maximize the effectiveness of teaching about AMR-related issues</li> </ul>   | <p>○ Done ○ In progress ○ Not done</p> |

| Activity  | ☑=Y                             |
|---|---------------------------------|
| ■ Identify appropriate content ( <i>findings from this step will inform the next step</i> )   | ○ Done ○ In progress ○ Not done |
| ■ Harmonize new or modified curriculum with national guidelines   | ○ Done ○ In progress ○ Not done |
| ■ Select core topics (include locally relevant issues based on local needs assessment) <ul style="list-style-type: none"> <li>○ Overview and the extent of the problem of AMR</li> <li>○ Mechanisms of resistance</li> <li>○ Rational medicine use</li> <li>○ Diagnostic techniques</li> <li>○ AMR surveillance</li> <li>○ Control measures for nosocomial infections</li> <li>○ High-risk environments for AMR (intensive care, obstetrics, surgery)</li> <li>○ Patient education and adherence to treatment</li> <li>○ Complex decision making and questions of ethics (economic incentives and promotional activities related to prescribing)</li> <li>○ Disease prevention/immunizations</li> </ul> | ○ Done ○ In progress ○ Not done |
| <b>Step 4: Determine an IPC/AMS/MS or other areas of AMR containment incorporation strategy</b>   | ○ Done ○ In progress ○ Not done |
| ■ Decide how to best fill the gaps in curriculum; for example: <ul style="list-style-type: none"> <li>○ Establish a short, stand-alone AMR package</li> <li>○ Strategically integrate increased IPC/AMS/MS or other areas of AMR containment content into existing courses</li> </ul>   | ○ Done ○ In progress ○ Not done |
| <b>Step 5: Design IPC/AMS/MS or other areas of AMR containment components for pre-service training</b>  | ○ Done ○ In progress ○ Not done |
| ■ Identify learning objectives and align best teaching and learning methods to each learning objective. See annexes A and B in <a href="http://siapsprogram.org/publication/altview/strengthening-pre-service-pharmacy-training-on-rational-medicine-use-and-antimicrobial-resistance/english/">http://siapsprogram.org/publication/altview/strengthening-pre-service-pharmacy-training-on-rational-medicine-use-and-antimicrobial-resistance/english/</a>  | ○ Done ○ In progress ○ Not done |
| ■ Adapt existing resources: Identify resources available within the institution and determine resources to be sourced from external institutions  | ○ Done ○ In progress ○ Not done |
| <b>Step 6: Implement the MSC/AMS/IPC curriculum</b>   | ○ Done ○ In progress ○ Not done |
| ■ Identify formal process for curriculum change   | ○ Done ○ In progress ○ Not done |
| ■ Submit proposals and due dates. The proposals should outline roles and responsibilities for the coordinators of departments, school, college, dean, and university curriculum committee in the curriculum review, development, or modification process  | ○ Done ○ In progress ○ Not done |
| ■ Identify any responsibilities for consultation  | ○ Done ○ In progress ○ Not done |
| ■ Identify any resource to be considered (personnel and time allocations and funding to cover additional costs; additional facilities)  | ○ Done ○ In progress ○ Not done |
| ■ Questions to consider: <ul style="list-style-type: none"> <li>○ Is change needed in the experiential component of training to cover the new focus on AMR (e.g., more time practicing communication skills under supervision to increase patient adherence to antibiotic treatment)?</li> <li>○ Will any suggested changes require administrative support?</li> <li>○ Will the reporting requirements for academic records be different?</li> <li>○ Will room or class schedules change?</li> <li>○ Will there be new communication issues (e.g., more interdepartmental meetings and assessment requirements)?</li> </ul>   | ○ Done ○ In progress ○ Not done |

## e-Learning Platform Development

An e-Learning platform is an integrated set of interactive online services that provides trainers and learners with information, tools, and resources to support educational delivery. LMICs may need support to build an IPC/AMS/AMR e-Learning program to supplement their pre-service or in-service programs, if one is not available. Countries can work with counterparts to identify a local information technology (IT) team to ensure smooth set up, management, and handover of the learning platform. This activity includes an assessment of an identified local IT team prior to setting up the platform to ensure alignment with learning management systems. This local IT team will receive mentoring and coaching support to enable it to take over management of the platform and to upload future courses and troubleshoot problems. Before setting up an e-Learning platform, conduct the rapid needs assessment described in step 1 of checklist 3. This will help identify potential local institutions/organizations to host the platform for the design and deployment of AMR e-Learning courses, tools, and resources for health care workers. Determine whether the platform will be used to deliver e-Learning courses synchronously or asynchronously. It is important to secure an experienced internal or external e-Learning instructional designer to ensure a soundly designed e-Learning program.

### Checklist 3. Setting up an e-Learning Platform

| Activity   | ☑=Y                             |
|--|---------------------------------|
| <b>Step 1. Prepare</b>   | 🟢 Done 🟡 In progress 🔴 Not done |
| <ul style="list-style-type: none"> <li>■ Perform a needs analysis to determine whether a problem/issue exists that can be appropriately addressed by an e-Learning platform</li> </ul>   | 🟢 Done 🟡 In progress 🔴 Not done |
| <ul style="list-style-type: none"> <li>■ Discuss the purpose of the platform and its intended audience with stakeholders</li> </ul>  | 🟢 Done 🟡 In progress 🔴 Not done |
| <ul style="list-style-type: none"> <li>■ Before setting up a new platform, perform an environment analysis (<a href="https://community.articulate.com/articles/how-to-do-an-e-learning-needs-analysis">https://community.articulate.com/articles/how-to-do-an-e-learning-needs-analysis</a>).               <ul style="list-style-type: none"> <li>○ Is there an existing platform locally to leverage?</li> </ul> </li> </ul>   | 🟢 Done 🟡 In progress 🔴 Not done |
| <ul style="list-style-type: none"> <li>■ If no platform exists, set up a new one and identify a suitable local institution to host the platform</li> </ul>   | 🟢 Done 🟡 In progress 🔴 Not done |
| <ul style="list-style-type: none"> <li>■ Consider needed resources               <ul style="list-style-type: none"> <li>○ Human resources (IT or tech-savvy person) for platform set up, management, and maintenance</li> <li>○ Budget for capacity building of facilitators of platform e-Learning course.</li> </ul> </li> </ul>   | 🟢 Done 🟡 In progress 🔴 Not done |
| <b>Step 2. Determine and establish the preferred learner method</b>  | 🟢 Done 🟡 In progress 🔴 Not done |
| Consider these questions to select the delivery platform:  | 🟢 Done 🟡 In progress 🔴 Not done |
| <ul style="list-style-type: none"> <li>■ Is payment required?</li> <li>■ If yes, is it a self-service payment model via platform?               <ul style="list-style-type: none"> <li>○ Yes ⇒ payment processor: PayPal? M-Pesa?<sup>6</sup> other? Need bank account to collect payment?</li> </ul> </li> <li>■ Manual enrollment?               <ul style="list-style-type: none"> <li>○ How will learners register their interest?</li> <li>○ Who will enroll them?</li> </ul> </li> <li>■ Self-enrollment?               <ul style="list-style-type: none"> <li>○ Need a platform able to support self-enrollment?</li> </ul> </li> </ul> |                                 |

<sup>6</sup> A mobile phone-based money transfer service used in Kenya and Tanzania. <https://en.wikipedia.org/wiki/M-Pesa>

| Activity  | ☑=Y   |
|---|---|
| <ul style="list-style-type: none"> <li>■ Bulk enrollment? (e.g., cohort of learners from one company/department/unit)                             <ul style="list-style-type: none"> <li>○ Platform must be able to support this</li> </ul> </li> <li>■ Enrollment with or without a course code/key?                             <ul style="list-style-type: none"> <li>○ Platform must support this capability</li> <li>○ How will learners obtain this code?</li> </ul> </li> </ul>  |   |
| <b>Step 3a. No platform exists: Set up a new e-Learning platform to deliver the course</b>  | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Select the most efficient website hosting environment                             <ul style="list-style-type: none"> <li>○ Self-hosted/self-managed (i.e., will you set up your own account and have a person responsible for managing it)?                                     <ul style="list-style-type: none"> <li>– Use a web hosting provider like <a href="#">GoDaddy</a> or <a href="#">BlueHost</a></li> <li>– Install selected platform software like <a href="#">Moodle</a> or <a href="#">WordPress</a> learning management system plug-ins</li> <li>– Customize and configure the platform</li> </ul> </li> <li>○ Free and cloud-based hosting (i.e., a third-party such as with <a href="#">Moodle Cloud</a> or <a href="#">LearnWorlds</a>)?</li> <li>○ Open source (e.g., Moodle, WordPress)?</li> <li>○ Enterprise (e.g., <a href="#">BlackBoard</a>)?</li> </ul> </li> </ul> | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Select initial candidate platforms for evaluation</li> </ul>   | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Compare platform features based on your learning and interaction needs for the course                             <ul style="list-style-type: none"> <li>○ Discussion boards</li> <li>○ Supports <a href="#">SCORM</a></li> <li>○ LTI<sup>7</sup> consumer (supports LTI)</li> <li>○ Grading/feedback capability</li> <li>○ Completion tracking</li> <li>○ Drip feed of content (conditional release)</li> <li>○ Extendable with add-ons, modules, or plugins</li> <li>○ Can it issue a certificate of completion</li> <li>○ Other</li> </ul> </li> </ul>  | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Select final platform to use</li> </ul>  | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Outline financial obligations against your budget                             <ul style="list-style-type: none"> <li>○ Determine what one-time costs are required</li> <li>○ List all recurring costs (monthly and annual) for platform and personnel</li> <li>○ Account for known upfront maintenance costs for potential content change requests</li> <li>○ Budget for software license upgrades and billable man hours for running/implementing upgrades</li> </ul> </li> </ul>   | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <b>Step 3b: Platform exists to be leveraged: Follow only steps 1, 2, and 3b (skip step 3a)</b>  | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Meet with institution with existing platform to discuss process for using the platform</li> </ul>  | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Discuss the types of courses you plan to implement on the platform</li> </ul>  | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |

<sup>7</sup> Learning tools interoperability, a learning standard like SCORM, allows e-Learning content to be inserted into a platform that can “receive/consume” that content format. The content appears embedded in the host platform for learners to interact with it as though they were logged into the source platform and experiencing it the same way. Allows the external/remote host/consumer to pull grades/scoring information into their own platform for tracking and reporting purposes. Content must be published by an LTI publisher platform for placement into an LTI consumer platform. Moodle can do both - publish and consume. It can publish individual activities as well as a whole course.



| Activity   | <input checked="" type="checkbox"/> =Y  |
|--|---|
| ■ Work with an e-Learning instructional designer to design the courses and upload them to the platform | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| ■ Follow the e-Learning course development checklist for e-Learning design and implementation          | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <b>Step 4: Follow steps 1–6 in checklist 4 for platform implementation</b>                             | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |

## e-Learning Course Development, Implementation, and Evaluation

An e-Learning course uses digital technologies to access educational curricula outside of a traditional classroom. Because e-Learning programs make use of multimedia, they can be more stimulating than face-to-face learning; however, designing a quality e-Learning course can be a daunting activity, especially when trying to integrate both instructional design elements and AMR/IPC/AMS components. It is therefore recommended to design your e-Learning course with support from an e-Learning instructional designer. Checklist 4 provides the steps for developing, delivering, and evaluating e-Learning courses.

### Checklist 4. Developing, Delivering, and Evaluating an e-Learning Course

| Activity  | <input checked="" type="checkbox"/> =Y  |
|---|---|
| <b>Step 1: Plan e-Learning course content</b>   | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| ■ Decide whether the course will be self-paced or instructor-led  | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| ■ Identify the end goals, objectives, outcomes, and competencies to be gained from the course (see <a href="https://openwho.org/courses/AMR-competency">https://openwho.org/courses/AMR-competency</a> for examples)  | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| ■ List topics that will address each goal/objective and align them to their corresponding objectives  | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| ■ Draft content for each topic <ul style="list-style-type: none"> <li>○ Reading material</li> <li>○ Videos</li> <li>○ Websites</li> <li>○ Explanations</li> </ul>   | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| ■ Draft reinforcement activities and assessments <ul style="list-style-type: none"> <li>○ Quiz</li> <li>○ Activity/homework</li> <li>○ Auto-graded</li> <li>○ Manual feedback</li> </ul>  | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| ■ Confirm that the selected platform can support the above reinforcement features   | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| ■ Decide on the best presentation strategy for the information in each topic, broken down by lesson <ul style="list-style-type: none"> <li>○ Videos of someone speaking/presenting</li> <li>○ Screencasts</li> <li>○ Simulations</li> <li>○ Conversations/dialogs</li> <li>○ Animations</li> <li>○ Interactive (i.e., clicking, drag-and-drop)</li> <li>○ PowerPoint style</li> <li>○ Images/graphics/infographics</li> <li>○ Text</li> </ul> | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |

| Activity  | ☑=Y   |
|---|---|
| <ul style="list-style-type: none"> <li>■ Decide on best end product                             <ul style="list-style-type: none"> <li>○ SCORM package</li> <li>○ Built into the platform</li> </ul> </li> </ul>  | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <p><b>Step 2: Secure instructional design team to develop the e-Learning course and/or upload it to the platform</b></p>  | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Determine who has the required skill set and best fits your budget                             <ul style="list-style-type: none"> <li>○ One individual jack-of-all-trades who can do it all vs a few people with shared skills across the board</li> <li>○ eLearning company (e.g., <a href="#">ePath Learning</a>, <a href="#">EMPOWER</a>, <a href="#">GCube</a>)</li> <li>○ Assembled e-Learning instructional design team with:                                     <ul style="list-style-type: none"> <li>– Graphic designer</li> <li>– Video specialist</li> <li>– Voice-over talent</li> <li>– Animations specialist</li> <li>– Content development specialist</li> <li>– Platform specialist/administrator to upload, setup, and maintain the course(s) and platform</li> </ul> </li> </ul> </li> </ul>                      | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <p><b>Step 3: Develop a plan for technical support for the e-Learning course</b></p>  | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Identify support person/team to help learners, facilitators, and platform administrator, if needed. How will users get help?                             <ul style="list-style-type: none"> <li>○ Platform provides end-user support</li> <li>○ Use platform admin for support tasks                                     <ul style="list-style-type: none"> <li>– Identify power users (<i>fellow learners/facilitators who are familiar with the system</i>) willing to help others</li> <li>– Set up self-service FAQs (<i>FAQ documents that users can read to find the help they need</i>)</li> <li>– Set up a Chat Bot (e.g., <a href="#">MyLiveChat</a>) (<i>Online chat box in corner of website where users can type in questions and get answers from a bot or a live support agent</i>)</li> </ul> </li> </ul> </li> </ul> | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Decide on support hours</li> </ul>   | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Decide on escalation/triaging strategy</li> </ul>  | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Define protocol for students to request and obtain support for course-related questions (to be handled by facilitators)</li> </ul>   | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <p><b>Step 4: Run a pilot e-Learning course to test the whole process from registration/enrollment through taking the course, participating in activities, grading, feedback, course completion, and course evaluation</b></p>  | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Develop two or three modules of the course to test flow, continuity, progress tracking, and completion                             <ul style="list-style-type: none"> <li>○ Does platform meet expectations?</li> <li>○ Does course development quality meet expectations?                                     <ul style="list-style-type: none"> <li>– Timely completion of work by designers</li> </ul> </li> <li>○ Effective communication with team</li> <li>○ Quality of work done is at or above par</li> <li>○ Support tools functioned as expected</li> <li>○ Facilitator and student support worked well</li> </ul> </li> </ul>   | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <p><b>Step 5: Develop a plan/strategy for e-Learning course monitoring</b></p>  | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Determine course facilitator(s)</li> </ul>   | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Train course facilitators on the platform</li> </ul>   | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Train course facilitators on running the course</li> </ul>   | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Plan for refresher train-the-trainer sessions</li> </ul>   | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |

| Activity  | <input checked="" type="checkbox"/> =Y  |
|---|---|
| <b>Step 6: Design a course evaluation and implement any updates</b>   | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Outline questions to ask learners                             <ul style="list-style-type: none"> <li>○ Ease of registration/enrollment</li> <li>○ Platform navigation</li> <li>○ Course navigation</li> <li>○ Relevance of course content</li> <li>○ Applicability and effectiveness of assessments</li> <li>○ Class interaction opportunities</li> <li>○ Facilitator effectiveness and skill</li> <li>○ Effectiveness of tech support</li> <li>○ What they like best</li> <li>○ What could be improved</li> </ul> </li> </ul> | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Outline questions to ask facilitators                             <ul style="list-style-type: none"> <li>○ Ease of access to platform and course</li> <li>○ Effectiveness of train-the-trainer sessions</li> <li>○ Comfort level using platform to manage course</li> <li>○ Efficiency of feedback system</li> <li>○ Interaction with learners</li> <li>○ Tech support worked well</li> <li>○ What they liked best</li> <li>○ What could be improved</li> </ul> </li> </ul>  | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Decide how to deliver evaluation                             <ul style="list-style-type: none"> <li>○ Use platform functionality</li> <li>○ External survey tool (e.g., <a href="#">SurveyMonkey</a>)</li> </ul> </li> </ul>   | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| ■ Analyze evaluation data   | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| ■ Generate report with any recommended changes  | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| ■ Send change request order to e-Learning team  | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| ■ Review and test changes   | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| ■ Approve/reject the update   | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <b>Result: e-Learning course is successfully and efficiently implemented with maximum learner competencies achieved</b>   | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |

## In-Service Blended Workshop

Due to technology advancements, blended learning programs offer tremendous opportunities to increase learners’ retention of skills and help LMICs bridge the knowledge and skills gaps in IPC/AMS/AMR. Blended learning combines the traditional face-to-face approach with e-Learning in-service programs to enable health care providers to access IPC/AMS/AMR materials and information from anywhere and at their own pace. Successful planning and implementation of a blended learning workshop involves several steps spanning multiple weeks, as described in checklist 5.

### Checklist 5. Planning an In-Service Blended Workshop

| Activity                                  | <input checked="" type="checkbox"/> =Y  |
|---|---|
| <b>6 to 8 Weeks Before the Workshop</b>   |   |
| ■ Verify or develop training budget       | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| ■ Identify target audience                | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| ■ Agree on maximum number of participants | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |

| Activity  | ☑=Y                             |
|---|---------------------------------|
| ■ Finalize names of trainers  | ○ Done ○ In progress ○ Not done |
| ■ Finalize names of guest speakers for opening and closing ceremonies   | ○ Done ○ In progress ○ Not done |
| ■ Send letter of invitation to speakers for opening and closing ceremonies  | ○ Done ○ In progress ○ Not done |
| ■ Develop a list of tasks to present the course and negotiate with co-trainers to decide who will complete each task  | ○ Done ○ In progress ○ Not done |
| ■ Meet with co-trainers to coordinate roles and responsibilities (announce date, site, and agenda in advance of co-trainer meeting)   | ○ Done ○ In progress ○ Not done |
| ■ Review the facilitator and participant guides and ensure that they conform to the country's context; make any necessary edits to the guides   | ○ Done ○ In progress ○ Not done |
| ■ Determine training supplies and materials needed  | ○ Done ○ In progress ○ Not done |
| ■ Develop a detailed agenda and set a date, topic, and time for each speaker  | ○ Done ○ In progress ○ Not done |
| ■ Set a date and location for the workshop; verify that the date does not coincide with major events or religious holidays; ensure that invited speakers agree on date and place  | ○ Done ○ In progress ○ Not done |
| ■ Develop workshop announcement and registration materials  | ○ Done ○ In progress ○ Not done |
| <b>4 Weeks Before the Workshop</b>  |                                 |
| ■ E/mail workshop announcement and registration materials to target audience; announcement should include “who should attend,” course title, course content/agenda, course objectives, date and location, instructions for registering, lodging/travel information (if necessary), and contact person | ○ Done ○ In progress ○ Not done |
| ■ Confirm arrangements for travel and lodging for co-trainers and guest speakers, if necessary  | ○ Done ○ In progress ○ Not done |
| ■ Agree on arrangements such as per diem for co-trainers and guest speakers   | ○ Done ○ In progress ○ Not done |
| ■ Ensure participants have received the invite and signed up for the e-Learning course  | ○ Done ○ In progress ○ Not done |
| <b>3 Weeks Before the Workshop</b>  |                                 |
| ■ Reserve audiovisual equipment (check working condition, extra light bulbs, and electrical outlet requirements)  | ○ Done ○ In progress ○ Not done |
| ■ Obtain flipcharts, pointers, felt tip markers, and other training materials that will be needed   | ○ Done ○ In progress ○ Not done |
| ■ Confirm training venue location   | ○ Done ○ In progress ○ Not done |
| ■ Make sure all participants have completed and passed the e-Learning course; if not, ask them to retake the course   | ○ Done ○ In progress ○ Not done |
| <b>2 Weeks Before the Workshop</b>  |                                 |
| ■ Print and assemble the participant guide.   | ○ Done ○ In progress ○ Not done |
| ■ Check on progress of participant registration   | ○ Done ○ In progress ○ Not done |
| ■ Assemble audiovisual materials (PowerPoint files, videos, overheads)  | ○ Done ○ In progress ○ Not done |
| ■ Print handouts, evaluation forms, and agenda  | ○ Done ○ In progress ○ Not done |
| ■ Make sure all participants have completed and passed the e-Learning course  | ○ Done ○ In progress ○ Not done |
| <b>1 Week Before the Workshop</b>   |                                 |
| ■ Make nametags for participants, co-trainers, and speakers   | ○ Done ○ In progress ○ Not done |
| ■ Develop sign-in sheet for participants  | ○ Done ○ In progress ○ Not done |
| ■ Develop course completion form or course certificate  | ○ Done ○ In progress ○ Not done |
| ■ Confirm audiovisual reservations  | ○ Done ○ In progress ○ Not done |

| Activity  | ☑=Y   |
|---|---|
| <ul style="list-style-type: none"> <li>■ Prepare supplies and training materials for transport to training site</li> </ul>  | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Review and rehearse training curriculum:             <ul style="list-style-type: none"> <li>○ Read through all activities rather than just focusing on those you will present. Having an idea of how the different activities fit together will help you focus on the information for each activity without duplicating material that will be presented in later activities. It also makes it easier to draw linkages with information from previous activities or to defer a question if the topic will be covered later in the course.</li> <li>○ Read the preparation section of your activities so that you know what to prepare in advance; namely, training aids and other kinds of help that you may need.</li> <li>○ Read the text for each activity and practice; be clear about the information to be covered and how to present it.</li> <li>○ Read the notes carefully and study the accompanying slides.</li> </ul> </li> </ul> | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <b>I Day Before the Workshop</b>  |   |
| <ul style="list-style-type: none"> <li>■ Check venue for adequate light, space, seating arrangements, temperature control, handicap access, and so on</li> </ul>  | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <b>During the Workshop: Day 1: 1 Hour Before Start Time</b>   |   |
| <ul style="list-style-type: none"> <li>■ Place welcome and directional signs at the facility</li> </ul>   | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Set up table to register/sign in participants and distribute training manual, name tags, training handouts, and course agenda</li> </ul>   | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Check set-up of room, check audiovisual equipment, adjust temperature, and check supplies (e.g., markers, flipcharts)</li> </ul>   | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <b>Immediately After the Workshop</b>   |   |
| <ul style="list-style-type: none"> <li>■ Debrief with co-trainers</li> </ul>  | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Send thank you letters to speakers and other key officials</li> </ul>  | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Analyze workshop evaluation data</li> </ul>  | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Prepare report of training</li> </ul>  | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <b>1 to 3 Months after the Workshop</b>   |   |
| <ul style="list-style-type: none"> <li>■ Follow up with participants to verify if they were able to apply knowledge and skills obtained during the workshop. Use free tools such as survey Gizmo or Survey Monkey.</li> </ul>   | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <ul style="list-style-type: none"> <li>■ Identify additional technical assistance or further training needed</li> </ul>   | <input type="radio"/> Done <input type="radio"/> In progress <input type="radio"/> Not done |
| <p><b>Result: Face-to-face training is successfully and efficiently implemented with maximum learner competencies achieved</b></p>  | <input checked="" type="checkbox"/> =Y  |