GLOBAL ANTIMICROBIAL RESISTANCE LABORATORY AND RESPONSE NETWORK

PERFORMANCE MEASUREMENT TOOL

ANTIMICROBIAL RESISTANCE STRATEGY AND COORDINATION UNIT

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INTRODUCTION

FORM APPROVED

OMB CONTROL NUMBER: 0920-1282

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Thank you for completing the Global Antimicrobial Resistance (AR) Laboratory and Response Network (Global AR Lab & Response Network) Performance Measurement (PM) tool. This tool is intended to establish and collect standardized process and outcome metrics for recipients implementing Global AR Lab & Response Network projects. Recipients will be asked to complete this tool annually, in addition to the required Cooperative Agreement annual performance and progress reporting.

Please complete the tool <u>using information that will be included in your organization's Year 3 performance narrative submission</u>. Please answer as many questions as possible.

If you need any assistance, please contact GARLRN@cdc.gov.

Public reporting burden of this collection of information is estimated to average 5 hours per response per year, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to CDC/ATSDR Reports Clearance Officer; 1600 Clifton Road NE, MS D-74, Atlanta, Georgia 30333; Attn: OMB-PRA (0920-1282).

****Please complete the following forms based on project activities implemented during budget period 3 (BP3).

FORM 1: RECIPIENT INFORMATION

- This form is to be completed at recipient level. Please complete based on project activities during the current budget period BP4. If any recipients are implementing multiple projects, they will be asked to kindly complete Sections 1-3 of this form for each additional Strategy 2-5 projects.
- For any questions where recipient is not aware or unsure of response, please enter 'N/A' or 'Unknown' where applicable

Name of Recipient Organization:

Recipient HQ location:

Please select the the option that best describes this organization (select all that apply):

- Non-governmental Organization (NGO)
- Government Organization
- Academic Institution
- Other (Please specify):

Funded Strategy(s): (Select all that apply)

- Strategy 2: Assess Antimicrobial Resistance in Enteric Pathogens
- Strategy 3: Assess Antimicrobial Resistance in Fungal Pathogens
- Strategy 4: Assess Antimicrobial Resistance in Invasive Bacterial and Respiratory Pathogens
- Strategy 5: Assess Antimicrobial Resistance in N. gonorrhoeae

Please select the pathogen(s) of interest for this project: (select all that apply)

- Carbapenem-resistant Acinetobacter
- Candida auris
- Clostridioides difficile
- Carbapenem-resistant Enterobacterales
- Drug-resistant Neisseria gonorrhoeae
- Drug-resistant Campylobacter
- Drug-resistant Candida
- ESBL-producing Enterobacteriaceae
- Haemophilus influenzae
- Vancomycin-resistant Enterococci
- Multidrug-resistant Pseudomonas aeruginosa
- Drug-resistant nontyphoidal Salmonella
- Drug-resistant Salmonella serotype Typhi
- Drug-resistant Shigella
- Methicillin-resistant Staphylococcus aureus
- Neisseria meningitidis
- Drug-resistant Streptococcus pneumoniae
- Drug-resistant Tuberculosis
- Erythromycin-resistant group A Streptococcus
- Clindamycin-resistant group B Streptococcus
- Azole-resistant Aspergillus fumigatus
- Drug-resistant Bordetella pertussis
- Other (please specify as many as needed):

SECTION 1: PROJECT IMPLEMENTATION

Please answer the following questions about this organization's experiences with project implementation¹. Please use information that will be included in this organization's Year 3 performance narrative submission.

PROJEC	PROJECT IMPLEMENTATION				
Q ID	Question	Answer options	Notes		
1.	How many countries is this project being implemented in during BP4?	Integer			
1.a.	Please select the countries in which this project was implemented during BP3. (select all that apply)	Check boxes for all CK 2104 Strategies 2-5 countries			
1.i.	What is the number of sites (laboratories, hospitals, healthcare facilities, etc.) that were supported as part of the project? Please answer for each country.	Integer	Follow up question for each country selected in 1.a.		
1.ii.	How many sites received direct material support (i.e., lab reagents/diagnostics, other lab equipment, IT material, printed SOPs, etc.) from this organization during this budget period as part of the project? Please answer for each country.	Integer	Follow up question for each country selected in 1.a.		
2.	Is this project contributing to achieving the goals of a country's national action plan (NAP) on antimicrobial resistance?	 a) Yes, in all countries where project is implemented. (→ 2.a/b.) b) Yes, in some countries (→ 2.a/b.) c) No (→ 2.c.) d) Don't Know e) Does not apply/No NAP has been developed in any target country(s) 			
	2.a./b.	If yes, please list all countries and describe supporting			

¹ **Implementation:** The execution or practice of a plan, a method, or any design, idea, model, specification, standard or policy for doing something. As such, implementation is the action that must follow any preliminary thinking for something to happen.

PROJECT	OJECT IMPLEMENTATION				
QID	Question	Answer options	Notes		
		activities of NAP (Open-ended)			
		List as follows:			
		1. [Country A Name], [supporting activities of NAP];			
		2. [Country B Name], [supporting activities of NAP];			
		3. [Country C Name], [supporting activities of NAP]; etc			
	2.c.	If no, please list barriers to participation and/or support of the NAP (Open-ended)			
3.	List any major product(s) (e.g., SOPs, job aids, manuscripts, posters, trainings, etc.) developed within this budget period.	Open ended			
	If none, enter N/A				
4.	Have any CDC Subject Matter Experts (SMEs) reviewed ² the major products listed in	a) Yes			
	question #5?	b) No (→ 4.b.) c) Don't Know			
		d) Does not apply			
	4.b.	If no, please explain (Open ended)			
5.	What strategies or activities has [pilot_recipname] implemented to address sustainability of the efforts and progress made with this project beyond the current budget period?	Open ended			
	Please use this space to include any additional information related to implementation of this project.	Open ended			

² **Reviewed:** have any SMEs looked over and provided feedback or help on major products developed through this project? This question aims to understand collaborative between CDC SMEs and recipients

SECTION 2: LABORATORY ACTIVITIES

Please answer the following questions based on this organization's current laboratory enhancement activities for this Global AR Lab & Response Network project. Please use information that will be included in this organization's Year 3 performance narrative submission and please be as thorough as possible.

LABORATOR	Y ACTIVITIES		
QID	Question	Answer options	Notes
1.	Is there a <u>national or central laboratory</u> ³ which performs external quality assurance (EQA) to subnational labs for this project?	a) Yes (→ 1.a.) b) No c) Don't know d) Doesn't apply	
	1.a. If yes, please:	i. List the number of labs that External Quality Assessment (EQA) was provided to, by country (Open ended)	
		ii. Describe the EQA (pathogens included, number of isolates or samples submitted, and frequency), by country. (Open ended)	
7	the current budget period, has this orga	nization provided training or support to any laboratories in stions	the following areas?
2.	CULTURING	a) What is the total number of labs where training or other activities for performing culturing were implemented. (Integer - Enter 999 if unknown)	
3.	PHENOTYPIC TESTING	a) What is the total number of labs where training or other activities for performing phenotypic testing were implemented. (Integer - Enter 999 if unknown)	
4.	GENOTYPIC TESTING	a) What is the total number of labs where training or other activities for performing genotypic testing were implemented. (Integer - Enter 999 if unknown)	
5.	ANTIMICROBIAL SUSCEPTIBILITY TESTING (AST), INCLUDING ANTIFUNGAL	a) What is the total number of labs where training or other activities for performing antimicrobial susceptibility testing	

³ National or central: quality assurance performed by national or central level government laboratory(s)

LABORATOR	LABORATORY ACTIVITIES			
Q ID	Question	Answer options	Notes	
	SUSCEPTIBILITY TESTING (AFST)	(AST) were implemented? (Integer - Enter 999 if unknown)		
6.	WHOLE GENOME SEQUENCING (WGS)	a) What is the total number of labs at which training or other activities for performing whole genome sequencing (WGS) were implemented? (Integer - Enter 999 if unknown)		
	Please use this space to include any additional information related to this organization's laboratory activities.	Open ended		

SECTION 3: WORKFORCE DEVELOPMENT ACTIVITIES

The following questions cover current education and training activities for different personnel targeted by this Global AR Lab & Response Network project. Do not answer questions based on future efforts, only established or current opportunities during budget period 3.

WORKFORC	WORKFORCE DEVELOPMENT ACTIVITIES			
QID	Question	Answer options	Notes	
Personnel Types	Please select the type of personnel that received training from this organization (can be in collaboration with partners): (select all that apply)	a) Laboratory b) Epidemiologist/Data Manager c) Healthcare Worker d) Field-based personnel (community interviewer) e) MOH/NPHL leadership f) Other (please specify): g) Trainings that were performed did not document types of personnel in attendance (please provide disaggregated number of personnel) h) No personnel received training during this budget period (→ end of form)		
15. For eac	h personnel type selected above, please ans	wer the following:		
1.	How many CDC-supported ⁴ education and training opportunities have targeted [insert personnel type] personnel?	(Open ended)		
2.	Are there any other partnerships (e.g., universities, hospitals, etc.) that provide mentorship for [insert personnel type] personnel targeted by this project?	a) Yes (→ 2.a.) b) No c) Don't Know		
	2.a.	If yes, please list these partnerships. (Open ended)		
3.	How many [insert personnel type] personnel received training?	(Open ended)		
4.	Has a training curriculum been	a) Yes (→ 4.a.)		

⁴ **CDC-supported:** any training activities or opportunities related to the implementation of the Global AR Lab and Response Network where CDC provided financial or technical support.

WORKFORC	WORKFORCE DEVELOPMENT ACTIVITIES			
QID	Question	Answer options	Notes	
	established for training [insert personnel type] personnel?	b) No		
	4.a. If yes,	i. Does the curriculum leverage a Train-the-Trainer model? (Yes/No)		
		ii. What entity is responsible for facilitating the curriculum? (Open ended)		
		iii. What assessments were conducted to ensure trainings addressed knowledge gaps? (Open ended)		
	Please use this space to include any additional information about this organization's workforce development activities related to this project.			

-----END OF FORM 1 -----

FORM 2: PROJECT IMPLEMENTATION AND REFERRAL NETWORK/SURVEILLANCE ACTIVITIES

The following questions are related to project implementation with partners as well as referral network and surveillance practices at EACH hospital, health care facility (HCF) and/or laboratory that is participating in [name of organization autofill]'s Global AR Lab & Response Network project.

Please complete <u>FORM 2 for EACH partner</u>, <u>HCF/hospital</u>, <u>anor laboratory</u>. Recipients with projects in multiple countries or engaged with multiple partners or HCFS/hospitals/laboratories will be asked to specify country and partner/facility name on each form.

Partner or Laboratory Site Information

1. Partner Name*:

* We are defining the term "partners" broadly to include partners that this organization regularly collaborates with or engages as part of the activities for this project. This can include national and sub-national level government ministries; individual healthcare facilities, hospitals and/or individual laboratories; academic partners; other non-governmental organizations (NGOs); etc.).

Examples: Country X MoH; Local hospital or HCF; Private laboratory; etc.

Is this partner a laboratory or healthcare facility with lab?

- i. Yes (→ Complete entire form for this site)
- ii. No (→ Respond to "**Alternative 2" & STOP once Section 1 is complete)
- 2. Select the option that best describes the level of the health system that the laboratory or healthcare facility site supports:
 - a. National level
 - b. Regional, state or provincial level
 - c. District or local level
 - d. Other (Please specify):
 - 2.a. Is this lab or healthcare site part of an academic institution? Y/N
 - 2.b. Is this lab or healthcare site part of a private organization? Y/N
- **Alternative 2. Select the option that best describes this partner: (If No selected above)
 - a. Government ministry (national or sub-national)
 - b. Private Industry
 - c. Academic Institution
 - d. NGO

e.	Other	(Please specify):
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- 3. Name of partner's location:
- 4. Name of country: country drop down menu
- 5. Project contribution(s) made by this partner⁵ (e.g., equipment and supplies procured, trainings provided, isolates collected and submitted, etc.):

SECTION 1: PROJECT IMPLEMENTATION PHASE

Q ID	Question	Answer options	Notes
6.	Select the phase that best describes this partner's and/or site's implementation, for the current	a) Exploration – Engaging stakeholders to identify 1. need(s); and 2. appropriate steps to address gaps or enhance activities	
	reporting period:	 b) Initiation – Project planning; consensus reached with stakeholders regarding project sites, objectives, and activities, as well as timeline for implementation 	
		c) Initial Implementation – Beginning stages of project implementation at selected sites including: 1. collection of baseline data; 2. establishing new practices/protocols; 3. supply/equipment procurement; 4. recruitment/hiring of locally based staff; etc.	
		d) Full Implementation and Maintenance – Majority of project activities have been rolled out and routinely monitored	
		e) Expansion/Scale-Up – Increasing the number of sites targeted for project activities	
		f) Reduction/Scale Down – Decreasing the number of sites targeted for project activities or scaling down scope of activities	

 $^{^{5}}$ This can apply to the partner as a whole or contributions made at the individual lab site level

QID	Question	Answer options	Notes
	Please use this space to provide	Open ended	
	any additional context or		
	information about project		
	implementation phase with this		
	partner.		

SECTION 2: LABORATORY NETWORK ACTIVITIES

The following questions cover current laboratory and/or referral network activities at the project site. This section is <u>only completed for laboratories</u> <u>or HCFs with lab</u>. Recipients will complete this section for each individual laboratory or HCF with lab site where project is being implemented. Do not answer questions based on future efforts, only established or current activities. Only answer questions based on project's pathogen of interest.

LABORATORY NETWORK ACTIVITIES			
QID	Question	Answer options	Notes
7.	Does this site participate in a laboratory	a) Yes	
	network or referral network?	b) No	
	(Only asked of laboratories or HCFs with lab)	c) Don't know	
		d) Does not apply	
8.	Has this site agreed to (or is it required to)	a) Yes	
	submit or forward isolates?	b) No (end of form)	
	(Only asked of laboratories or HCFs with lab)	c) Don't know (end of form)	
		d) Other (Please specify):	
9.	Which of the following testing methods are routinely performed at this site/laboratory?	a) Culturing	
		b) Antimicrobial Susceptibility Testing (AST and ASFT)	
	Select all that apply.	(e.g., e test, disk diffusion, broth microdilution)	
		c) Phenotypic Testing (e.g., MALDI-TOF, Vitek2, API, etc.)	
		d) Genotypic Testing/ Polymerase chain reaction (PCR) -	

Answer options Answer options Sequencing (e.g., WGs, short-read Illumina, long-read ONT, direct amplicon sequencing, NGs, etc.)	LABORATORY N	LABORATORY NETWORK ACTIVITIES			
ONT, direct amplicon sequencing, NGS, etc.) f) Other (Please specify):	Q ID	Question	Answer options	Notes	
For each test type selected above, please answer the following: I. Testing methods performed on project pathogen of interest (select all that apply) Culturing - only in context of project pathogen(s) of interest I. Testing methods performed on project			e) Sequencing (e.g., WGS, short-read Illumina, long-read		
For each test type selected above, please answer the following: i. Testing methods performed on project pathogen of interest (select all that apply) interest i. Testing methods performed on project pathogen of interest (select all that apply) interest i. Testing methods performed on project pathogen of interest (select all that apply) interest i. Enteric bacteria culture i. N. gonorrhoeae culture i. Other fungal culture i. Other fungal culture i. Other fungal culture i. Other please specify): i. Unknown AST - only in context of project pathogen(s) of interest i. Broth microdilution (e.g. sinsititre): i. Disk diffusion: i. Testing methods performed on project interest i. Enteric bacteria culture i. Negnorrhoeae culture i. Other please specify): i. Unknown AST - only in context of project pathogen(s) of interest i. Agar dilution; i. Vitek 2 i. Other queese specify): i. Unknown Phenotypic - only in context of project pathogen(s) of interest interest i. API (manual) i. MALDI-TOF (e.g. Bruker, Vitek MS)			ONT, direct amplicon sequencing, NGS, etc.)		
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For each test type selected above, please answer the following: i. Testing methods performed on project pathogen of interest (select all that apply) interest • Enteric bacteria culture • Invasive bacteria culture • N. gonorrhoeae culture • Other fungal culture • Other fungal culture • Other fungal culture • Other please specify): ; • Unknown AST - only in context of project pathogen(s) of interest • Broth microdilution (e.g. sinsititre); • Disk diffusion; • Gradient test/E test; • Agar dilution; • Vitek 2 • Other automated device (e.g. Phoenix, Microscan) • Other (please specify):; • Unknown Phenotypic - only in context of project pathogen(s) of interest • API (manual) • MALDI-TOF (e.g. Bruker, Vitek MS) • Vitek 2			· · · · · · · · · · · · · · · · · · ·		
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i. Testing methods performed on project pathogen of interest (select all that apply) Culturing - only in context of project pathogen(s) of interest					
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MALDI-TOF (e.g. Bruker, Vitek MS)Vitek 2					
• Vitek 2					
			_		
			Chromogenic Media (e.g. CHROMagar)		

LABORATORY NETWORK ACTIVITIES			
Q ID	Question	Answer options	Notes
		Colormetric Tests (e.g. Carba NP, Blue-Carba)	
		 Lateral Flow Assay (e.g. Carba 5) 	
		• mCIM	
		Serotyping	
		Other biochemical tests	
		Other (please specify): ;	
		• Unknown	
		Genotypic - only in context of project pathogen(s) of	
		interest	
		• PCR	
		RT-PCR/qPCR	
		 Cepheid Xpert (e.g. Carba-R) 	
		• LAMP	
		Hologic Panther	
		Other (specify):;	
		• Unknown	
		WGS - only in context of project pathogen(s) of interest	
		What type of sequencing are you doing?	
		 Whole Genome Sequencing 	
		Short-read	
		• Long-read	
		 Direct Amplicon Sequencing 	
		 Next Generation Sequencing 	
		Sanger Sequencing	
		 Other, please specify 	
		What instrument(s) are you using?	
		Illumina	
		O Please specify machine:	
		MiSeq	
		NextSeq	
		MiniSeq	
		Other, please specify:	
		Pacific Bio (PacBio)	
		O Please specify machine:	
		■ Revio	

QID	Question	Answer options	Notes
	question	 Vega Onso Other, please specify: Oxford Nanopore Technologies O Please specify machine: MinION GridION PromethION Other, please specify: Other, please specify 	
	ii. Total testing volume (during budget period)	Open ended	
	iii. Total number of personnel that received training in testing method	Integer	
***e) Sequencing	iv. Total number of personnel trained to perform bioinformatics ⁶ analysis of WGS data	Integer	
only	v. Describe the bioinformatics pipelines being utilized to analyze data	Open ended	
10.	Does this site have a program or any activities that focus on retaining staff ⁷ with institutional and technical knowledge once they are trained on any of the testing methods listed previously?	a) Yes (→ 10.a.) b) No c) Don't know d) Does not apply	
	10.a.	If yes, please describe:	
11.	Describe how laboratory data and results are managed and what platform (e.g., Laboratory Information Management System (LIMS), etc.) is used for data management at this	a) Data is managed manually b) Laboratory Information Management System (LIMS) c) Sample Management System d) N/A for this reporting period	

 $^{^{\}rm 6}$ Bioinformatics: the science of collecting and analyzing complex biological data.

⁷ Refers to any efforts undertaken by the local/national government or other partners to ensure that institutional knowledge remains at the laboratory site

LABORATORY NETWORK ACTIVITIES			
QID	Question	Answer options	Notes
	laboratory/facility.	e) Unknown e) Other (please specify):	
12.	If applicable, describe data management in the field or at point of collection (e.g., environmental surveillance sites, etc.) as well as in the lab.	Open ended	
13.	Is regular external quality assessment performed for AR testing at this project's participant laboratories?	a) Yes (→ 13.a.) b) No c) Don't Know d) Does not apply	
	13.a. Please describe the type and frequency of these EQA activities(e.g., PulseNet EQA, 2 bacterial specimens/ year for identification and AST, etc)	Open ended	
	Please use this space to include any additional information about this partner/laboratory/healthcare facility	Open ended	

SECTION 3: SURVEILLANCE ACTIVITIES

Please answer the following questions based on current surveillance efforts for this organization's Global AR Lab & Response Network project. Do not answer questions based on future efforts.

	SURVEILLANCE ACTIVITIES			
QID	Question	Answer options	Notes	
1.	Are epidemiological data elements	a) Yes (> 1.a.)		
	collected with samples tested under this project?	b) No (→ 1.b.)		
	project	c) Don't know		
	1.a. If yes, please	i. Describe what data elements are being collected. (Open ended)		
		ii. List each of the sites collecting these elements within the project and indicate if the information is shared with public health for decision making. (Open ended)		
	1.b. If no, please	i. List the barriers to collecting epidemiological data elements at sites throughout the referral network? (Open ended)		
2.	Are the collected data for this project	a) Yes (à 2.a.)		
	(e.g., phenotypic, genotypic, and NGS)	b) No (→ 2.b.)		
	integrated into subnational, national, or			
	global databases?	c) Don't Know		
	2.a. If yes, please	i. Describe what database(s) the data were reported to. Please list all. (Open ended)		
		ii. Indicate the frequency of data sharing with national-level decision makers (e.g., MoHs, NPHIs, etc.)? (Open ended)	a) Daily b) Weekly c) Bi-weekly d) Quarterly e) Annually f) Other (please specify):	
	2.b.	If no, please list any barriers to data integration. (Open ended)		

SURVEILL	SURVEILLANCE ACTIVITIES			
Q ID	Question	Answer options	Notes	
3.	Have any alerts ⁸ or findings from the lab	a) Yes (→ 3.a.)		
	or facility required a local response (e.g., within facility or local area, data sharing,	b) No		
	PPS, etc.)?	c) Don't Know		
	3.a.	If yes, please list the entities involved, response activities, and how data was shared. (Open ended)		
4.	Have any alerts or findings from the lab or facility been detected which required a sub-national or national response (e.g., new organism/type of resistance or large outbreak)?	a) Yes (→ 4.a.) b) No		
	4.a.	If yes, please list the entities involved, response activities, and how data was shared. (Open ended)		
	Please use this space to include any additional information related to this organization's surveillance activities.	Open ended		

END OF FORM 2	
FND OF PM TOOL	

⁸ **Alert:** Any newly detected** antimicrobial resistance findings that may influence surveillance and control practices.

^{**} Examples of newly detected antimicrobial resistance include:

^{1.} Exceptional phenotypes that have not previously been reported or are very rare; and

^{2.} Novel resistance genotypes that are associated with mechanisms of resistance that have a high public health impact (i.e., high potential for spread and health impact) or pose serious challenges in laboratory detection and surveillance