

Antimicrobial Resistance (AMR) Structured Operational Research and Training IniTiative (SORTIT) Annual Review 2021

NIHR Global Health Research Portfolio

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Annual reporting and review process

The Annual Reporting and Annual Review templates are part of a continuous process of monitoring, review and improvement within NIHR's Global Health Research portfolio. These are an opportunity for DHSC and partners responsible for delivering a funding scheme to reflect critically on the performance and ongoing relevance of awards.

The main sections of the template have been developed in accordance with cross-funder common reporting practice and will be used to provide accountability for the use of public money, meet Official Development Assistance transparency and compliance requirements. Within these common sections, sub-sections have been included to enable us to monitor progress against planned activities, test our portfolio Theory of Change using evidence collected on outputs and outcomes in accordance with the NIHR GHR portfolio results framework. There are also sections on value for money, risk management, financial reporting, monitoring, evaluation and learning updates.

The process for completing this template involves the following steps:

- 1. DHSC works with partners responsible for delivering a funding scheme to ensure that the relevant monitoring information is collected at the award level (as set out in the NIHR Global Health Research results framework). This information will be collected using existing reporting mechanisms wherever possible, before bespoke reporting is considered.
- 2. Delivery partners collate a synthesis of the award level monitoring information and present aggregated funding scheme level findings (and award level wherever specified) within this template. Tips on reporting style and content to minimise the need for redrafts and edits include the following:
- 3. This report is then shared with DHSC for comment and feedback.
- 4. DHSC will then use the annual report and additional information gathered through meetings, field visits and any other documentation to complete the annual review template relevant sections are highlighted with green boxes. This will include an assessment of overall funding scheme performance over the last 12 months, identify lessons learnt, time-bound recommendations for action consistent with key findings and will be used as an evidence base for future funding decisions. Please write this summary with a public audience in mind, assuming no prior knowledge of the funding scheme.
- 5. Annual review signed off and published.

1. DSHC summary and overview

1.1 Brief description of the AMR–SORT IT programme

This programme aims to build sustainable operational research capacity to generate and use evidence to tackle the emergence, spread and health impact of antimicrobial resistance (AMR). The programme uses the Structured Operational Research and Training Initiative (SORT IT), which is a global partnership coordinated by TDR, the Special Programme for Research and Training in Tropical Diseases. TDR is co-sponsored by the United Nations Children's Fund (UNICEF), the United Nations Development Programme (UNDP), the World Bank and the World Health Organization (WHO). SORT IT supports countries and institutions to conduct operational research around their own priorities, build sustainable operational research capacity and help them make evidence-informed decisions to improve programme performance. The focus of SORT IT is on front-line health workers and decision-makers.

The AMR–SORT IT programme targets seven low- and middle-income countries (LMICs), namely Colombia, Ecuador, Ghana, Nepal, Myanmar, Sierra Leone and Uganda. These countries align with those supported by the Fleming Fund, a £265 million UK aid programme managed by the Department of Health and Social Care which aims to generate, share and use antimicrobial resistance data. While the Fleming fund focuses on generating and sharing antimicrobial resistance data (pillar 2) of the Global Action Plan on tackling AMR, the AMR-SORT IT programme focuses on the other 4 pillars namely: preventing infections, antibiotic stewardship, assessing the burden of AMR and improving use of diagnostics and treatments. The roles are thus complimentary in supporting the Global Action Plan to tackle AMR. AMR–SORT IT research are tailored to local priorities and are coordinated with national AMR coordinating committees and in-country Fleming Fund activities where these exist. Research priorities are also in line with the Global Action Plan on antimicrobial resistance, published by WHO.

1.2 Summary of AMR–SORT IT programme performance over the last 12 months (general progress on activities, early outputs, outcomes, impacts across all awards)

During 2021, to overcome COVID-19 restrictions on travel and gatherings, the AMR– SORT IT programme championed the development and deployment of a SORT IT online training platform. Using this innovative tool, 35 research studies (started in 2019) were completed and published, and 37 new research studies were started in 2021 involving countries in Asia, Africa and the Americas (Colombia, Ecuador, Ghana, Myanmar, Nepal, Sierra Leone and Uganda). All these research studies are policy relevant and endorsed by the AMR Coordinating Committees in target countries. These AMR committees are the highest decision-making bodies in the target countries and are responsible for ensuring the implementation of national AMR action plans, setting research priorities and applying the findings of research.

To improve research communication and dissemination, SORT IT trainees have benefited from a newly developed SORT IT training module on 'effective communication of research findings', maximizing the opportunities for research uptake. To foster timely generation of evidence, the AMR–SORT IT programme also pioneered a new mechanism to expedite the research publication process to a record time of 10–12 weeks. Thirty-five studies from Ghana, Myanmar, Nepal, Sierra Leone and Uganda were published in two Open Access journals: The Tropical Medicine and Infectious Diseases Journal

<u>https://www.mdpi.com/journal/tropicalmed/special_issues/AMR</u> and the Public Health Action journal

https://www.ingentaconnect.com/content/iuatld/pha/2021/00000011/a00101s1;jsessionid= 1c62edhlr0c0b.x-ic-live-01

The AMR–SORT IT programme has also contributed to strengthening health systems. Seventy-three percent (73%) of individuals involved with the AMR–SORT IT project continue to apply their acquired skills in a synergistic manner to the COVID-19 global response. AMR activities have specifically contributed to building health system resilience by protecting health workers, keeping health facilities safe, improving laboratory diagnostic capacity and informing communities on preventive measures. This suggests that the investment in research training to date has helped to strengthen health system resilience by equipping health workers with the skills and competencies needed for tackling COVID-19 in various ways. It has also supported the integration of research within health systems.

Finally, the AMR–SORT IT programme enhanced global engagement by expanding networks to tackle AMR. The AMR–SORT IT network now includes AMR coordinating committees, WHO regional and country offices and 64 implementing partners from 26 countries in Europe, Asia, Africa and the Americas. TDR has also provided support to WHO country offices and One Health committees, improving strategic planning and implementation of AMR plans.

1.3 Performance of delivery partners

TDR have kept DHSC informed of progress across AMR SORT-IT via regular update meetings, email and sharing comms opportunities.

Due to COVID-19 related delays much of the AMR SORT-IT programme was paused due to travel restrictions globally and SORT-IT participants being frontline health workers in their respective countries being unable to prioritise the AMR SORT-IT course at that time.

TDR developed a SORT -IT online platform in late 2020 which has been up and running throughout 2021, with all AMR SORT-IT modules having taken place virtually via this platform. Depending on the country context and in coordination with country facilitators the plan for future modules is to conduct courses in a hybrid manner, with early modules taking place in person to support relationship building and later modules being run virtually.

Following the coup d' etat in Myanmar on the 1st of February 2021, the United Nations guidelines for Myanmar stipulated avoidance of meetings and capacity building activities with the current authorities, which meant that AMR SORT-IT activities were unable to continue as planned. TDR provided detailed information to DHSC to feed into the FCDO-led review of activities and worked quickly to replace activities by bringing forward and launching an AMR SORT-IT programme in Ghana in November 2021. TDR has demonstrated the importance of in country links and leveraging WHO country offices to mitigate against unforeseen risks and maintain diversity in delivery countries of the programme. TDR is also looking to resume activities in Myanmar when possible and is monitoring guidance to do so.

The original MoU was due to expire in December 2021. Due to COVID-19 related delays TDR worked with DHSC to propose options for a no-cost extension (NCE). DHSC approved a 12-month extension to December 2022 and the MoU amendment was signed in September 2021. The 12-month extension was considered the preferred option as it would allow the time needed to start the 72 priority AMR research studies (an expected output) in seven target countries and propel them to full implementation mode. This extension would also allow completion of the required cycle of 24 training modules for research capacity building in countries. There would also be better spacing of training modules allowing adequate time for data collection, validation and analysis.

Importantly, more time was needed for engagement of decision makers in using the generated research evidence for decision making. Many decision makers were overwhelmed and busy trying to tackle the COVID-19 pandemic. A 12-month extension also allowed space for contingency as the COVID-19 remains unpredictable globally with multiple waves circulating. Finally, the impact of the first 36 (50%) studies on tackling AMR and strengthening health systems could be demonstrated.

The implications of less than 12 months NCE were thus: significant loss in impact and value for money of the programme due to incomplete work; expertise-time lost by WHO/TDR, ministries of health and 26 collaborating institutions in starting projects and not completing them and reputational damage for WHO/TDR and DHSC from not meeting the expectations of countries.

TDR's communication of their financial position has improved and as highlighted in the 2020 annual review clear and frequent updates have given greater confidence. Due to

reduced travel costs, moving primarily to online course delivery and the pausing of activities in Myanmar there remains continued uncertainty in spend which will require careful monitoring and mitigation and planning by TDR. TDR has been scoping options for potential activities which would make best use of the remaining budget allocation in line with DHSC and TDR strategic priorities.

1.4 What are the key lessons identified over the past year for wider DHSC/NIHR global health research

Lessons learned from moving online: The SORT-IT online platform has now enabled a much more agile mode of delivery which can be deployed at lower cost and allows for mentors in different countries to interact with mentees. Where possible the benefits of building relationships in the early modules and then moving online has been shown to be preferable, however this should continue to be monitored and learning from various virtual models across the portfolio collated.

Risk mitigation through local contacts: The suspension of activities in Myanmar and rapid launch of activities in Ghana has again demonstrated the importance of having strong connections in country context to manage unforeseen risks. The benefit of being part of a wider WHO SORT-IT programme has also been illustrated through the support of the WHO country offices both to manage the suspension in Myanmar and commence activities in Ghana. The WHO regional and country offices offer a very strong network through which other NIHR opportunities could be tested and disseminated.

Finance and MoU amendments: Through the process of developing options for the NCE and securing the MoU amendment DHSC and TDR have improved communication and understanding of organisational priorities. DHSC and TDR will work closely to manage the spend profile

TDR is in the process of developing a new five year strategy (2023-2028) and keen to continue developing their relationship with DHSC while ensuring key lessons are captured both for potential future SORT-IT programmes and the GHR portfolio. While being guided by country priorities, the overriding themes of the strategy will have several areas that align with the GHR strategic framework including; health systems strengthening to ensure that people and the health system have been provided (ahead of time) with the tools, strategies and interventions to tackle ongoing and future pandemics; using operational research to promote equity (e.g equitable access to vaccination); improving access to health for vulnerable populations and in particular reducing preventable deaths of mothers and children, reducing the impact of climate change on health and fostering One Health approaches.

1.5 DHSC to summarise key recommendations/actions for the year ahead, with ownership and timelines for action

Recommendation	Owner	Timeline
Consider various options for managing underspend and increasing impact.	DHSC and TDR	Spring 2022
Monitor the benefits and costs of the online SORT-IT platform and feedback from alumni on what can be improved	TDR	September 2022

2. Summary of aims and activities

2.1 Brief outline of AMR–SORT IT programme aims

SORT IT is a global partnership-based initiative coordinated by TDR. SORT IT seeks to make countries "data rich, information rich and action rich" thereby building health system resilience, enhancing programme performance and improving public health. The SORT IT model combines research training and implementation with a hands-on (learning by doing) approach that empowers front-line health workers and new trainers.

The <u>aim</u> is to build sustainable operational research capacity to generate and utilize evidence on the emergence, causes, spread and health impact of AMR in low- and middle-income countries. <u>Specific objectives</u> are to:

- 1. Build adequate and sustainable local Operational Research (OR) capacity on AMR.
- 2. Support OR for:
 - Improved surveillance and monitoring of the AMR situation in countries.
 - Identifying drivers of antimicrobial drug resistance in human populations and enhancing prevention.
 - Improving antimicrobial stewardship and procedural interventions.
- 3. Build adequate and sustainable structures and processes for evidence-informed decision-making at national level.
- 4. Foster mechanisms for knowledge sharing to maximize the potential for broader research impact.

2.2 Delivery partner's assessment of progress against milestones/deliverables

AMR–SORT IT Programme targets	Current status of progress against milestones/ deliverables	If the award is not on track to contribute to expected outcomes and impacts, why not? What are the potential impacts of this and how have plans been revised to accommodate this?
64 research subjects started	72 (exceeded)	COVID delays in 2020 were overcome through the development and deployment of an online training platform.
30 studies published	35 (exceeded)	
80% of first authors from LMIC	100% (exceeded)	
40% female first authors	47% (exceeded)	
70% government first authors	78% (exceeded)	
80% milestone completion (SORT IT modules)	97% (exceeded)	
80% participant satisfaction score (SORT IT modules)	93% (exceeded)	
60% southern institutions involved	75% (exceeded)	
50% of mentors are alumni	43% (not reached)	Alumni become mentors only once they have completed all their training modules. The COVID-19 related delays in implementing SORT IT trainings had a negative spin off on the numbers of alumni completing all modules and become available to be mentors at the end of 2021. Catch-up is expected in 2022 with completion of all outstanding trainings and proactively involving alumni in all trainings in 2022.

2.3 Delivery partner's assessment of how individuals/communities (including any relevant sub-groups) have been engaged and their needs reflected in identifying research priorities, design/planning, implementation, analysis, and reporting and dissemination.

a) The SORT IT AMR project is focused on LMIC countries where the populations are poor and vulnerable with weak health systems. The burden of AMR is particularly high for the rural poor who have limited access to health facilities and antibiotics. Several research projects are focused on vulnerable groups such as neonates. Topics related to "One Health" such as improving water quality, waste management, rational use of antibiotics in animal husbandry will have a wider benefit on the lives of poor communities.

b) By embracing a "One Health" approach in the planning process, comprehensive engagement has been established with AMR coordinating committees, WHO country/regional offices and implementing partners in target countries in Asia, Africa and Latin America.

This approach has allowed those who are expected to use the results to be engaged early and to be at the forefront for identifying relevant research that fits with national AMR priorities. The mechanisms for participant selection and research topics were also endorsed by AMR committees. The AMR committee in any given country has broad representation including communities from the different sectors of the one health platform. This facilitated a bottom up approach which allowed for community engagement in defining research priorities and selection of participants The AMR committee is the highest governing structure for tackling AMR. All research studies have been endorsed by such AMR committees. For example, in Ghana and Sierra Leone where One Health activities are relatively advanced, AMR committee members which included representatives of communities from the agricultural and animal husbandry sectors were requested to propose relevant research topics and nominate individuals who would conduct the proposed research and benefit from being trained at the same time, A national selections committee then vetted all nominations and the final list of those selected we endorsed by the AMR committee and finally by TDR. The findings of research that was completed in 2021 were also disseminated to the community members through presentations and one- to-one discussions by the researchers themselves supported by WHO country office colleagues. Outputs and outcomes

SORT IT activities were fully aligned with national AMR action plans and complement ongoing AMR activities (including those of the Fleming Fund). In Ghana, Nepal, Sierra Leone and Uganda, where the Fleming fund is active, it focuses on generating and sharing antimicrobial resistance data (pillar 2) of the Global Action Plan on tackling AMR. There is also focus on improving laboratory infrastructure and capacity of laboratory staff. Meanwhile, the AMR-SORT IT programme focuses on the other 4 pillars namely: preventing infections, antibiotic stewardship, assessing the burden of AMR and improving use of diagnostics and treatments. The roles are thus complimentary in supporting the Global Action Plan to tackle AMR.

As both the AMR-SORT IT programme and the Fleming Fund activities fall under the umbrella of the AMR national coordinating committees and are supported by WHO country offices, careful attention was taken to avoid duplication of activities. For example: in Nepal and Sierra Leone, where the Fleming Fund supported the building of infrastructure and training of laboratory personnel, the SORT IT programme focused on aspects such as, how well the laboratory services were being used, challenges related to turn-around times of laboratory results, and improving the use of laboratory data to assess AMR burden etc.

Put simply, while the Fleming Fund activities focused largely within the laboratory, the AMR-SORT IT programme focused outside the laboratory and on various aspects related to use of laboratory services, quality of services and data improvements.

High quality policy/practice relevant research and innovation outputs

Output type		Total number (cumulative number since funding began)
Publications in scientific journals	35	https://www.mdpi.com/journal/tropicalmed/special_issues/AMR Public Health Action: Ingenta Connect Table Of Contents
Research protocols	72	
Evidence summaries in plain language	30	<u>Communicating research findings with a KISS (who.int)</u> <u>https://tdr.who.int/activities/sort-it-operational-research-and-training/communicating-research-findings</u>
Standard operating procedures for SORT IT	1	
SORT IT curriculum packages		
- For protocol development (6 days)	1	
- For data capture and analysis (6 days)	1	

2.4 Aggregated number of outputs by output type.

Output type		Total number (cumulative number since funding began)
- For manuscript writing (7 days)	1	
- For knowledge management (7 days)	1	
Database on SORT IT facilitators	1	
Database of SORT IT participants	1	
Database on SORT IT metrics	1	
Platform for data-sharing (COVID/AMR)	1	
SORT IT online training platform	1	SORT IT operational research and training (who.int)
Newsletters on SORT IT AMR	5	SORT IT operational research and training (who.int)

2.5 List of research and innovation outputs produced that are considered to be most significant in contributing towards high quality applied global health knowledge with strong potential to address the needs of people living in low and middle income countries.

Award	Output title	Authors	Date	Output type (e.g. article, book chapter, policy brief etc.)	DOI (where applicable)
SORT IT– AMR project	 35 policy relevant publications on AMR and policy briefs 	Authors from Asia and Africa	2021	Articles and policy briefs	https://www.mdpi.com/journal/tropical med/special_issues/AMR Public Health Action: Ingenta Connect Table Of Contents Communicating research findings with a KISS (who.int)
	2. Innovative SORT IT online training platform to overcome COVID related restrictions.	TDR/TB-RPC	Jan 2021	Online platform that can be used for capacity building even in the event of future outbreaks	https://sortitresearch.com/en
	3. Updated operational research and knowledge management curriculum	TDR and partners	2021	SORT IT curriculum for research protocol, data analysis, manuscript writing and communication that can be used by various implementing partners for capacity building in operational research and evidence-informed decision- making	

2.6 Lead/senior authorship

Thirty-five studies from the AMR–SORT IT programme were published in special journal issues in 2021 and are available on the TDR website at: <u>https://tdr.who.int/activities/sort-it-operational-research-and-training/communicating-research-findings</u>.

Informing policy, practice and individual/community behaviour in LMICs

- 2.7 Delivery partner's summary of the most significant outcomes of any award level engagement and/or influence of policy makers, practitioners and individual/community behaviour
- 1) Innovations in digital technology a SORT IT platform for research during COVID-19

In early 2021, we championed the development and deployment of a dedicated SORT IT online training platform, allowing us to restart and propel SORT IT research activities and trainings, which were significantly delayed due to COVID-19 restrictions in 2020. Developed with a SORT IT partner in Armenia (TB-RPC), this platform has also allowed us to network with 26 countries and bring subject matter experts to link in for one- or two-hour sessions that in the past would have resulted in travel to countries. It has thus reduced costs and improved efficiencies.

What does the SORT IT online platform offer?

The SORT IT online platform was developed to mimic similar conditions in the face-to- facetrainings. It has an integrated zoom facility for linking up people (online), it serves as a resource hub for all training materials and resources, it has shared and individual folder options that are easily accessible to all mentors and research participants, and it allows simultaneous editing of study protocols and manuscripts with the latest versions saved automatically. There are also break out rooms for group work and live conferencing facilities for linking up mentors, subject matter experts and others from anywhere in the world. Finally, the timings of meetings are automatically adjusted to the local time zone of participating countries.

Tendering and procurement:

The platform was developed by an existing SORT IT partner institution (TB-RPC in Armenia) that is also responsible for its maintenance and continued development. The institution was considered the most competent to perform this work by TDR and

competitive bidding was waived for the following reasons: a) The institution has an inhouse pool of over 60 experts with experience in information technology and platform development which allowed rapid delivery of the desired product at the time of COVID-19; b) the institution had already started developing an online training platform for training small numbers of individuals using the SORT IT approach and this facilitated spring-boarding to the current platform; c) being an NGO that also conducts research, the institution is uniquely placed in understanding the platform requirements for simultaneously accommodating research and training; d) the lead persons at TB-RPC are SORT IT alumni and now mentors on the AMR-SORT IT programme making the institution unique in being a provider and a consumer at the same time – this has allowed rapid stream-lining of the platform to various needs; and e) in terms of cost, being based in Armenia, their rates are far lower than commercial rates in high-income countries which offered value for money.

Lessons learned are being utilised for improvement and sustainability:

The platform has been subjected to iterative development since 2019 and has been used for trainings in various languages and disease themes and allows for both fully online and hybrid training modes. Following each virtual implementation of SORT IT modules, identified problems are able to be immediately corrected by the development team. The platform with its materials is now being adapted to allow distance learning of individuals who have basic research skills with mentorship being provided from anywhere in the world. Going forwards, the plan is to optimize its use to reduce travel related carbon footprints and the overall costs of training. Based on evaluation and user feedback we will opt for hybrid models with a mix of online and face-to-face encounters, prioritising networking at the beginning and end of modules with more technical aspects delivered virtually.

Total cost: The total cost of the platform development was around 50,000 USD and yearly maintenance is about 12,000 USD. Using the online platform, we conducted virtual and "hybrid" trainings which resulted in 35 policy relevant studies from Ghana, Myanmar, Nepal, Sierra Leone and Uganda being published. Thirty-seven new studies from Colombia, Ecuador, Ghana and Sierra Leone were also started. The SORT IT platform was vital for bringing together individuals from six WHO country offices and 64 partner institutions in Asia, Africa, Europe and Latin America.

Lessons learnt: The SORT IT virtual platform proved to be an asset at a time of COVID-19. First, it provided an efficient means of continuing research and training when global travel and gatherings were restricted. Second, it allowed us to network with partners in 26 countries and to link with subject matter experts which in the past, would have required travel to countries. It thus reduced costs, improved efficiencies and reduced the carbon footprint. There are also some downsides: For example, upstream engagement and one-to-one interactions (a vital aspect of networking and building human bonds in certain cultures) with those expected to use the results of research is weaker. Time differences proved to be a major challenge for mentors from different parts of the world. For example, for a training in Ghana, mentors from India were 4 hours ahead and those in Vancouver were seven hours behind. Practically, when a training module started at 9 am Ghana time, it was already lunch hour in India and about midnight in Vancouver. This posed logistic challenges by reducing efficiencies in managing meetings, providing feedback to researchers and ensuring outputs. It also increased online fatigue.

The way forward is to implement hybrid training models: online and face-to-face in the same training module and some modules which are run in series could be face-to-face and others virtual. Mentors could also be sourced from countries where there is less of a time difference.

2) Rapid publication to ensure timely evidence is available for decision-making

During 2021, thirty-five research projects were completed and propelled through a novel publication mechanism for timely evidence generation for decision-making. These studies were published in a record time of 10–12 weeks by: a) proactively accelerating the journal processes; and b) providing structured support to the researchers. Available at https://www.mdpi.com/journal/tropicalmed/special_issues/AMR and Public Health Action: Ingenta Connect Table of Contents Lessons learnt: Some of the practical aspects for speeding up the peer-review and publication process include:

- Proposing at least five reviewers per research paper to minimize journal time spent in searching for reviewers. The peer reviewers proposed to the journal were subject matter experts identified through independently commissioned literature reviews involving each research topic. Lead authors on recent publications were selected for review
- Ensuring that all reviews came in within 10 days and all revisions (minor and major) were tackled within a maximum of 10 days. An alert system was put in place for reviewers and authors to respond on time.
- Rapid work by the journal in moving from paper acceptance to online publication
- Through mentorship by the SORT IT team and plenary reviews during training modules, ensuring that all manuscripts were in excellent shape prior to submission.
- D Prompt support from mentors to mentees to assist with peer review and revisions.
- □ Availability of a SORT IT virtual platform that facilitated work on manuscript revisions.

3) Improving research communication with a 'KISS' – Keep It Short and Simple

Effective communication of research findings is needed to bridge the gap between researchers and decision-makers and influence individual and community behaviour that improves public health.

To improve research communication, TDR and partners developed a new SORT IT training module aimed at providing researchers with the skills and tools needed to effectively communicate their research findings with a KISS – 'keep the information short and simple.' Researchers in Ghana, Nepal, Sierra Leone and Uganda subsequently produced four outputs:

- A communication plan targeting decision-makers and stakeholders.
- A one-page plain language summary with key messages and recommendations.
- A PowerPoint presentation of 10 minutes for use at conferences and a lightening presentation (3 minutes) for use with national decision-makers.
- An elevator pitch (30 to 60 seconds oral presentation) for use in opportunistic oneto-one conversations with stakeholders.

The plain language summaries can be accessed at: <u>https://tdr.who.int/activities/sort-it-operational-research-and-training/communicating-research-findings</u>.

"If research is to have impact and change health outcomes for the better, the research findings should be translated into recommendations that can shape policy and/or practice and SORT IT is invaluable for this purpose". Thomas Samba, Chief Medical Officer, Ministry of Health and Sanitation, Sierra Leone.

"The SORT IT training serves a great need to present research findings in a simple manner, so that we the decision-makers can quickly and easily grasp the key messages and take action to address urgent health issues." Madan Kumar Updhyaya, Chief, Quality Standards and Regulation Division, Ministry of Health and Population, Nepal.

4) Implementation of new research studies in line with national priorities

The AMR–SORT IT programme is intentionally focused on low- and middle-income countries where the burden of AMR is high, particularly for the rural poor who have limited access to health facilities and antibiotics. Several research projects are focused on vulnerable groups such as neonates and women where policy and practice change are needed to reduce AMR related mortality. In 2021, 37 new policy and practice relevant AMR projects, including projects linked to One Health, were started in Colombia, Ecuador, Ghana and Sierra Leone.

The World Health Organization's global action plan to tackle antimicrobial resistance emphasizes the "One Health" approach. This approach englobes humans, animals, the food chain, the environment and the interconnections between them as one entity. Thus, we included research topics such as improving water quality, waste management, rational use of antibiotics in animal husbandry, bacterial pathogens in agricultural produce and impact of COVID-19 on antibiotic resistance, among others, which will benefit more widely the lives of poor communities by informing policy, practice and community behaviour.

SORT IT activities are fully aligned with national AMR action plans and complement ongoing AMR activities (including those of the Fleming Fund). This bottom-up approach has allowed those who are expected to use the results, such as members of national AMR committees and programme managers in disease control programmes, to be at the forefront for identifying relevant research that fits with national AMR priorities. The mechanisms for participant selection and research topics were also endorsed by these stakeholders.

SORT IT is now geared to catalyse the entire evidence-to-action cycle from defining the most relevant research, to implementation of research, to knowledge management, and to eventual impact on the ground.

LMIC and UK researchers trained and increased support staff capacity

Training level	Total number who are currently undertaking or have completed during the award period	% LMIC nationality	% female
2019 - operational research	Each research project simultaneously implements four layers of training, namely: 1) training of front-line workers and programme staff; 2) training of SORT IT alumni as trainers; 3) training of academia as trainers; and 3) training of WHO country office staff. In 2019, we enrolled 36 front-line health workers with research projects. Thirty-one (31) SORT IT alumni, 12 academic staff and 16 WHO staff were also part of the team as part of a training-of-trainers approach. An average of three people per project were trained.	100%	47%
2020 – operational research	In 2020, there were no trainings due to COVID-19. Activities were restarted in early 2021.	N/A	N/A
2021 – operational research	In 2021, we enrolled 36 more front-line health workers with research projects in Colombia, Ecuador, Ghana and Sierra Leone. Cumulatively, from 2019 to December 2021 a total of 72 front-line health workers were enrolled or completed research training and 131 benefited from training-of-trainers. All principal investigators were from LMICs and 47% were	100%	47%

2.8 Aggregate level summary across awards of individual capacity strengthening supported by at least 25% NIHR award funding

Training level	Total number who are currently undertaking or have completed during the award period	% LMIC nationality	% female
	female. An average of three people were trained per research project		

LMIC institutional capacity strengthened

- 2.9 Delivery partner's summary of evidence of activities and outcomes from across awards demonstrating how NIHR funding has helped to strengthen LMIC institutional capacity to contribute to and lead high quality research and training within a national research ecosystem.
- 1. Research training: The AMR–SORT IT model uniquely combines research training and implementation and enhances global engagement by building communities of practice. Through an apprenticeship approach, both participants and new trainers have been empowered. Each research project was used to simultaneously implement four layers of training with the following numbers enrolled for training:
 - Level 1: 72 research participants with priority research subjects on AMR included in the SORT IT training programme.
 - Level 2: Training of SORT IT alumni and new trainers (training-of-trainers) 59 former SORT IT graduates were paired with senior mentors and trained on teaching OR through the training-of-trainers approach.
 - Level 3: Training of academia: 42 individuals from various academic institutions were trained to become trainers.

Level 4: 30 lead AMR staff from seven WHO country offices were trained on OR.

With each research project being used to train approximately three individuals, the gains in capacity building are multiplied and so too the value for money.

"I am certain that participants will benefit from the SORT IT training and mentorship program which is vital for early-career researchers. This training improves the knowledge, skills and competencies to conduct operational research and generates evidence for reducing the AMR burden"

Dr Joseph Kanu, National AMR focal person, AMR country coordinating platform, Sierra Leone.

Lessons learnt: Conducting trainings through an interactive and team approach increases collaborative responsibility and enriches the training and research experience for both researchers and mentors. Team solidarity is enhanced and so too the building of networks.

Facilitating research integration: All SORT IT activities and research studies were aligned with the pillars of the strategic AMR plans of target countries. As such, AMR–SORT IT has contributed to informing the pillars of the AMR plans at national and global levels.

47% of the studies are on strengthening surveillance and monitoring within the health system. This is vital to "feel the pulse" of the AMR situation in countries. Without good surveillance, we would be thinking and acting blindly.

2. AMR SORT IT enhancing the response to COVID 19 pandemic

The AMR-SORT IT focal points who are embedded within the WHO country office teams and supported by DHSC have played a key role in moving the AMR agenda while acting synergistically in the COVID-19 response.

"The AMR–SORT IT Officer was of great support in strengthening the laboratory network, preparedness and response to COVID-19 in Nepal."

Dr Runa Jha, Director, National Public Health Laboratory, Government of Nepal

"I commend the valuable technical support provided by the AMR–SORT IT fellow in debunking COVID- 19 rumours, misinformation and concerns. The skills acquired through the SORT IT training proved useful for the review and validation of information, data analysis and effective communication, which helped generate simple and transparent messages for public awareness on COVID-19"

Dr Amrit Pokharel, Call centre, Chief of Epidemiology and Outbreak Management, Government of Nepal

3. Enhancing global engagement and building networks on AMR: The AMR– SORT IT project brought together a network of 64 partner institutions from 26 countries, thereby creating LMIC to LMIC and high-income country (HIC) to LMIC networks and partnerships (communities of practice on AMR). 5. Creating digital solutions: An innovative online SORT IT training platform was developed in 2020 and fully deployed in 2021 to overcome COVID-19 related restrictions on travel and gatherings. This platform now allows virtual implementation of SORT IT trainings and capacity strengthening activities through remote facilitation.

https://www.youtube.com/watch?v=uXFTxOUwT4s

The platform can be used in circumstances where the standard face-to-face approach is not permissible (e.g., during future pandemics).

6. Knowledge management and research communication: Trainees benefited from a newly developed SORT IT training module on 'effective communication of research findings', maximizing the opportunities for research uptake.

"If research is to have impact and change health outcomes for the better, the research findings should be translated into recommendations that can shape policy and/or practice and SORT IT is invaluable for this purpose".

Dr Thomas Samba, Chief Medical Officer, Ministry of Health and Sanitation, Sierra Leone

"The SORT IT training serves a great need to present research findings in a simple manner, so that we the decision-makers can quickly and easily grasp the key messages and take action to address urgent health issues."

Dr Madan Kumar Updhyaya, Chief, Quality Standards and Regulation Division, Ministry of Health and Population, Nepal

2.10 Aggregated distribution of support staff (collected for the purposes of understanding how wider research support responsibilities are divided between LMIC and HIC institutions)

	Total number of FTE support staff (research managers, finance, admin, community engagement practitioners, other) in post during the last 12 months
Employed in LMICs	12 FTE (6 SORT IT technical officers and 6 SORT IT fellows)
Employed in HICs	3.1 FTE (1 SORT IT coordinator, 1 SORT IT technical officer, 0.2 field implementation support, 0.5 finance controller, 0.2 knowledge management, 0.2 administrative support)

Equitable research partnerships and thematic networks established/strengthened

2.11 Delivery partner's assessment of the extent to which this NIHR funding has contributed towards building or strengthening equitable research partnerships/collaborations and thematic networks (where applicable, including engagement with communities).

Through TDR's convening power, global engagement on AMR was enhanced by bringing on board 64 SORT IT partners from 26 countries, including 43% SORT IT alumni who are engaged with AMR–SORT IT trainings, thereby boosting HIC–LMIC and LMIC–LMIC partnerships. Fifty (78%) of these partner institutions are from LMICs. This demonstrates TDR's capacity to effectively mobilize institutions, expertise and build communities of practice on AMR at a global level ("think global, act local"). Close collaboration was also established with WHO country offices in Colombia, Ecuador, Ghana, Myanmar, Nepal, Sierra Leone and Uganda. The institutions involved with collaborations are listed below.

LMIC-LMIC collaboration in AMR (50 institutions): Tuberculosis Research and Prevention Center NGO (Armenia); The Universidade Federal de Ciencias de Saude de Porto Alegre, (Brazil); Universidade de Brasilia, (Brazil); Universidad de Concepcion (Chile); Universidad de los Andes (Colombia); Universidad Pontificia Bolivariana (Colombia); Universidad Pedagógica y Tecnológica (Colombia); The Central University (Ecuador); Bahir Dar University (Ethiopia); CSIR- Water research institute (Ghana); Kintampo Health Research Center (Ghana); Environmental Protection Agency (Ghana); Institute of Statistical, Social and Economics Research (ISSER, Ghana); University National Centre for Training and Research in Rural Health (Guinea); University of Nairobi (Kenya); Madhira Institute (Kenya); AMPATH (Kenya); Lighthouse Trust (Malawi); Damien Foundation (Nepal); School of Public Health (Nepal); B.P. Koirala Institute of Health Sciences (Nepal); Patan Academy of Health Sciences, (Nepal); National Public Health Laboratory (Nepal); KIST Medical College and Teaching Hospital, (Nepal); Department of Medical Research (Myanmar); ICMR-National Institute of Epidemiology, Chennai, (India); Bangalore Medical College and Research Institute (India); All India Institute of Medical Sciences (India); International Union Against Tuberculosis and Lung Disease (The Union), South East Asia office (India); Indian Council of Medical Research- National Institute of Epidemiology (India); Jawaharlal Institute of Postgraduate Medical Education & Research (India); GMERS Medical College Gotri Vadodara Gujarat, (India); Medical College Baroda, Gujarat, (India); Sri Manakula Vinayagar Medical College, (India); Ministries of Health (Colombia Pakistan, Nigeria, Sierra Leone, Uganda, Zimbabwe); Ministry of Agriculture and Livestock (Nepal, Sierra Leone); The Autonomous University of Yucatán, (México); Food and Agriculture Organization (Sierra Leone); Stellenbosch University (South Africa); Sustainable Health Systems (Sierra Leone); Makerere University (Uganda); Lire University (Uganda); and Zambart (Zambia).

HIC–LMIC in AMR: (14 institutions): Institute of Tropical Medicine (Belgium); University of Toronto (Canada); Public Health, Ontario (Canada); International Union Against Tuberculosis and Lung Disease (France); National Public Health Center, (Hungary); Médecins Sans Frontières, (Luxembourg); Public health Agency (Sweden); University of Saint Andrews (Scotland); Public Health England (United Kingdom); University of Salford (United Kingdom); University of Liverpool (United Kingdom); The Quadram Institute Bioscience, Norwich, (United Kingdom); University of Washington (USA); and California State University of Fullerton (USA).

The building of communities of practice continues to have a "domino effect", with institutions such as the Indian Council of Medical Research (ICMR), TB-RPC in Armenia, the Damien Foundation (Belgium), the Institute of Tropical Medicine (Belgium) and Médecins Sans Frontières (MSF) all taking up AMR as part of their institutional priorities. For example, MSF has recruited a focal point for operational research on AMR based in Beirut, Lebanon. The person is also closely collaborating with TDR and has become part of the mentor pool. MSF has also developed a research agenda on AMR in various target countries and is collaborating closely with TDR and the SORT IT partner institutions in tackling AMR and other health system challenges.Similarly, the Division of Health System Research of ICMR - National Institute of Epidemiology, Chennai (Dept of Health Research, Ministry of Health and Family Welfare, Govt of India) recruited two focal points (both former SORT IT alumni) to promote operational research on various health system issues including AMR. High level discussions were held with TDR and they have joined the SORT IT partnership as a lead institution to work with TDR in 2022 on tackling AMR and supporting efforts for health systems strengthening.

Lessons learnt: The mobilisation of 64 institutions in 26 countries proved vital during COVID-19 as it helped leverage the human resources and expertise needed to generate high-quality evidence for decision making Such global solidarity is an asset for ongoing and future work in strengthening health systems.

	Total committed amount (GBP) allocated to:	% of total committed amount to all institutions:
UK/HIC institutions	£677 590	21%
LMIC institutions	£2 599 408	79%
All institutions	£3 277 358	

2.12 Aggregated HIC/LMIC spend across all awards

2.13 Delivery partner's summary of any other noteworthy outcomes beyond those captured above (note that these may include unanticipated outcomes (both positive/negative), outcomes outside health, and any other secondary benefits to the UK or any other countries)

The fact that AMR–SORT IT supported staff working in WHO country offices in the seven target counties, and that over 70% of all those involved with the AMR–SORT IT project continue to be on the front-lines of the COVID-19 response, has had wider benefits in terms of controlling the spread of new infections on a global basis, including in the United Kingdom. AMR activities continue to contribute to building health system resilience by protecting health workers, keeping health facilities safe, improving laboratory diagnostic capacity and informing communities on preventive measures. Control of AMR, which also has pandemic potential, is of indirect benefit to all countries, including the United Kingdom ("AMR there, is AMR here, is AMR everywhere").

Thirty WHO country staff, including AMR–SORT IT officers and operational research fellows in countries, have increased their capacity for research and now form part of the mentoring team for SORT IT for tackling AMR. We also included 42 individuals from academic institutions to become trainers. This has enhanced the pool of mentors for SORT IT and will help to further scale up efforts to tackle AMR. The COVID-19 related delays in implementing SORT IT trainings had a negative spin off on the numbers of alumni completing all training modules and becoming available to be mentors at the end of 2021. Alumni become mentors only once they have completed all their training modules. Currently, overall, 43% of alumni became mentors (desired target=50%). We expect to catch up on this target in 2022 with completion of all outstanding trainings cycles and proactively involving alumni in all trainings in 2022.

The AMR–SORT IT programme has galvanised the AMR committees in the target countries by bringing various members of the One Health platform together and has promoted collaborative planning to tackle AMR. For example, close to 25% of all research subjects include agriculture and the environment, such as efficiency of sewage plants in reducing bacterial counts; water safety in hospitals; antibiotic use in animal husbandry; bacterial pathogens in agricultural produce irrigated with wastewater; and AMR in ambient air.

The early engagement of these AMR committees and buy-in within the AMR–SORT IT project continue to consolidate a capacity building approach which embraces the concept of "Train individuals, Embed them within disease control programmes to build the critical mass of human resources for research, Retain them by minimizing turnover and Enable them by equipping them with the right skills and tools for tackling AMR. This "Train, Embed, Retain, Enable" concept is in line with WHO's Thirteenth General Programme of Work (GPW-13).

3. Value for money

- Delivery partner to summarise their approach towards ensuring value for money in how the research is being undertaken. For example:
- 3.1 Economy how are you (the delivery partner) ensuring that funding is being spent on the best value inputs?

Innovation to tackle COVID-19 restrictions while reducing costs: In 2021, we championed the development and deployment of a SORT IT online platform to catch up on COVID-19 delays in implementation. Developed with a SORT IT partner in Armenia (TB-RPC), this platform allowed us to move to full implementation while avoiding the need for travel and accommodation, resulting in cost savings. It also allowed us to bring subject matter experts from various countries to link in for one- or two-hour sessions, which in the past would have required travel to countries. The initial development of the platform was funded by USAID and TDR (at a cost of approximately US\$ 20 000). Further development and enhancement continued in 2021 with NIHR funds. Using this online platform resulted in a 30–40% reduction in the cost of training modules. This innovation shows leverage, an innovative manner of reducing costs, improved efficiencies and a reduction of our carbon footprint.

For more information, please see link: https://drive.google.com/file/d/11pDfzF8_DFHvKP0AFMWxxwv8rUO51gKG/view?usp=sharing

The AMR–SORT IT programme strengthens health systems: The programme has embedded staff in WHO country offices and in the emergency response units in countries. These individuals continue to work on the front-lines of the COVID-19 response, with their activities contributing to health system resilience by protecting health workers, keeping health facilities safe, improving laboratory diagnostic capacity and informing communities on preventive measures. There is a strong synergy between AMR work and the COVID-19 response and this has been a win–win for health systems. This shows that individuals working in the health system have acquired skills and competences which are needed both now and in the future.

"Through several operational research studies conducted through SORT IT, the AMR– SORT IT programme has played a vital role in demonstrating gaps in Infection, Prevention and Control in health facilities and providing solutions. Proper implementation of Hand Hygiene and Infection prevention and control is a priority in all our health facilities to reduce infection transmission in our Health Care system and to the community at large"

Madam Christiana Kallon, National IPC Coordinator, Ministry of Health of Sierra Leone

Rapidly replacing Myanmar with Ghana due to the unstable political situation in Myanmar. The current United Nations guidelines for Myanmar stipulate avoidance of meetings and capacity building activities with the de facto authorities. It was thus not feasible to embark on the SORT IT cycle in Myanmar in 2021.

During the conception stage of the AMR project, TDR and DHSC mutually agreed to target six countries namely Ghana, Colombia, Myanmar, Nepal, Sierra Leone, and Uganda. Except for Colombia, the other countries were considered as front-runner countries of the Fleming Fund and implanting the AMR-SORT IT programme would complement ongoing Fleming Fund activities.

With an initial three-year timeframe, four of the six countries had the infrastructure and personal in place to have national SORT IT trainings namely: Colombia, Myanmar, Nepal, and Sierra Leone. When Myanmar faced political turmoil, the option which was most simple to implement and offered best value for money was to replace the proposed programme in Myanmar with one in Ghana than start afresh in a new country. In Ghana TDR had already established engagement with the Government, the WHO country office was supportive and we had already a SORT IT officer in post and a technical officer who could rapidly set up and run a national SORT IT programme there. DHSC was closely involved with this process and concurred with this proposed option. To maximize the overall value for money of the AMR–SORT IT project, we thus brought forward and launched an AMR–SORT IT programme in Ghana in November 2021. The WHO country office team in Ghana, the National AMR coordinating committee and the SORT IT partnership have welcomed this move. In the future If the situation in Myanmar improves, we will consider revamping a new SORT IT cycle there.

Lessons learnt: The ability to rapidly shift from Myanmar to Ghana and to harness the required engagement was possible, thanks to close collaboration and early buy-in that TDR achieved with the AMR country coordinating committees and WHO country office in Ghana. The presence of a SORT IT fellow and a technical officer who were both embedded within the WHO country office in Ghana were of advantage in facilitating discussions with country counter-parts and moving activities into rapid implementation. This has demonstrated the importance of in-country links and leveraging WHO country offices to mitigate against unforeseen risks and maintaining diversity in delivery countries of the programme.

Use of WHO procurement measures include tenders for hotels and procurement of supplies, with strict internal procedures that ensure competitive bidding.

Use of WHO country office staff for the organization of SORT IT training courses cuts down administration and other costs.

Enhanced efficiency - how are you (the delivery partner) maximising the outputs (research and innovation outputs, knowledge exchange, strengthened researcher and support staff capacity, strengthened partnerships/networks) for a given level of inputs?

The value for money of this project has continued due to TDR's established convening power, global engagement capacity and the SORT IT know-how that has been built over the past 12 years.

The use of 59 trained SORT IT alumni from previous SORT IT courses who work as mentors in the training involving new front-line health workers brings efficiency. The involvement of 42 individuals from academic institutions also adds to the pool of future mentors, which will allow further scale-up of efforts to tackle AMR.

The deployment of an online training platform that allows virtual training has also increased efficiencies by allowing projects to avoid being significantly delayed due to pandemic-related travel bans. It has also enhanced the ability to bring together subject matter experts to link in for short sessions that in the past would have required travelling to countries.

Effectiveness – how are you (the delivery partner) assessing that the outputs deliver the intended outcomes?

To promote effectiveness and impact, we continued to engage early with those who are expected to use the results of the research.

The programme also developed a new training module on knowledge management which includes a session on 'how to effectively communicate research findings to decision-makers'. This has helped to engage policy- and decision-makers to use the results of the research: they include members of AMR committees, managers of disease control programmes and decision-makers within technical working groups.

All SORT IT training modules and research activities have time-bound milestones and performance targets against which achieved outcomes are assessed. We also have a post project survey that assesses the impact of research on policy and/or practice on the ground.

3.2 Equity

 Please summarise any activities that have taken place to ensure everyone is treated fairly as part of the application process and within funded research teams, regardless of gender, gender identity, disability, ethnic origin, religion or belief, sexual orientation, marital status, transgender status, age and nationality.

We continue to include (and collect data) on gender, age geographic equity and nationality in the participant selection process and we specifically target vulnerable groups as a priority for research topics wherever possible, for example studies on neonates, children and women. We have also encouraged LMIC first and last authorship in published outputs whenever possible. In 2021, 47% of selected front-line workers in the SORT IT training programme were women and we strive to reach 50%. In terms of geographic equity and involvement of One Health subjects in Sierra Leone, the selection committee introduced quotas to ensure urban and rural equity and inclusion of One Health subjects as part of the applicant selection process.

The AMR–SORT IT programme continues to focus on seven LMIC countries, some of which have weaker health systems and populations that are generally vulnerable to AMR. This is due to limited or lack of access to health care facilities, inadequate laboratory diagnostic facilities and limited access to effective antibiotics due to availability or high costs. In many LMICs, the use of sub-optimum doses of antimicrobials, or using antimicrobials to which resistance has already developed, fosters drug resistance.

Paying attention to these geographic and socio-economic perspectives contributes to an equitable approach to programming.

□ How are you (the delivery partner) ensuring that the funded research benefits vulnerable groups to improve health outcomes of those left behind?

To ensure that funded activities benefit vulnerable groups, TDR works to ensure that these activities are focused on responding to nationally relevant research priorities, integrating the research agenda into the national plans and ensuring endorsement of research participants and subjects by multisectoral AMR committees. This has included involving the human, agricultural and environmental sectors. The AMR committee in each of the target countries (comprising of all key stakeholders, including the community) are well placed to guide us on issues of geographic and gender equity, dissemination of research findings and eventual research uptake.

By introducing new and more effective means of communicating research findings, those expected to use the results of research are able to better understand and utilize the research findings to impart improvements to policy and practice.

3.3 List of any additional research and infrastructure grants secured by LMIC partners during the course of this NIHR funding – including value, funding source,

lead institution and country, what % of additional funding allocated to LMIC partners, HRCS code.

Not applicable

4. Risk

4.1 Delivery partner to summarise the five most significant risks (both in terms of potential impact and likelihood) across awards within the last year.

Risk	How is the risk being managed/mitigated?	Current status
The unstable political situation in Myanmar. The UN guidelines for Myanmar stipulate that meetings and capacity building activities with the de facto authorities should be avoided. It was thus not feasible to consider a SORT IT cycle in Myanmar in 2021.	As an alternative, and to maximize the overall value for money of the AMR–SORT project, we brought forward and launched an AMR–SORT IT programme in Ghana in November 2021. Ghana is one of the agreed target countries for the AMR–SORT IT project and the WHO country office team in Ghana, the national AMR coordinating committee and the SORT IT partnership have welcomed this move. NIHR concurred with this decision. If the situation in Myanmar improves, we will consider revamping a new SORT IT cycle there in 2022.	<u>Likelihood</u> : High <u>Impact</u> : Low due to shift to an alternative country (Ghana)
COVID-19 pandemic and continued embargos on travel and gatherings in 2021	We developed and deployed a virtual SORT IT platform, allowing training activities to restart in January 2021. To catch up with the project deliverables, we have rescheduled SORT IT modules through 2021 and 2022 and a project extension was accepted by NIHR until December 2022. This should ensure that we meet all of the required deliverables	<u>Likelihood</u> : Medium <u>Impact</u> : Low, due to availability of an online training platform through which we can deliver trainings and a no-cost extension from NIHR
Non-availability, drop- outs or illness of some research participants as the majority (70%) of those involved with the AMR–SORT IT project are also on the front-lines of the COVID-19 response	We continue to liaise early with AMR technical committees, WHO country offices and researchers to provide replacements in case any researcher is unable to participate.	<u>Likelihood</u> : Medium <u>Impact</u> : Low as a team approach is used to implement research and alternative candidates can cover for those unable to attend
Difficulties found by researchers to collect research data on time due to over-riding COVID-19 related priorities	We continue to liaise with WHO country offices to provide additional data collection staff who can perform field data collection. Funding has also been allocated for this activity.	<u>Likelihood</u> : Medium <u>Impact</u> : Medium as the COVID-19 pandemic is ongoing

Risk	How is the risk being managed/mitigated?	Current status
Currency fluctuation risk between the pound sterling and US dollar	Contingency was included in budget lines	<u>Likelihood</u> : Low <u>Impact</u> : Low
Lack of continued buy-in from WHO country offices and AMR committees due to overriding priorities, including COVID-19	Continued engagement with WHO country office staff and AMR committee members.	Likelihood: Low, good engagement continues with AMR committees and WHO offices Impact: Low

- 4.2 Fraud, corruption and bribery. Delivery partner to summarise:
 - their approach to handling accusations of fraud, corruption and bribery (if not covered in previous reports)
 - any changes in the last year to the anti-corruption strategy applied to managing NIHR funded awards

WHO has a written policy on combatting fraud and corruption and TDR confirms that this policy will be fully implemented in the event concerns arise. TDR will take timely and appropriate action to investigate any allegations of fraud and corruption in accordance with its accountability and oversight framework. If an allegation is found to be substantiated through investigation, WHO will give due consideration to timely and appropriate sanctions in accordance with regulations, rules and procedures, and full recovery is sought from the recipient entity. TDR will keep DHSC informed through mechanisms outlined in WHO's policy (reporting to governing bodies and to donors).

4.3 Safeguarding

 Please detail and highlight any changes or improvements you (the delivery partner) have made in the past year to ensure safeguarding policies and processes are in place in your project and your downstream partners.

As illustrated in the 2018 External Audit of TDR and in the annual reviews of the Internal Control Framework, TDR follows WHO's policy on internal controls, and we comply with WHO mechanisms for safeguarding assets, including preventing and detecting errors, theft and fraud. In addition, to enhance safeguarding of policies and processes for this project, TDR has introduced:

- A. Safeguarding of SORT IT trainees, partners and beneficiaries:
- 1. In all of our activities, TDR abides by WHO's policies on the prevention of any form of harassment, sexual abuse, or violence of any sort, and all staff members receive regular mandatory training on these topics. All WHO employees are obliged to respect these policies as part of their contract agreement. In addition to the mandatory training, regular staff seminars are also held. As for research, we follow all of the applicable Good Clinical Practice rules and standards that safeguard the rights and wellbeing of research subjects.

https://intranet.who.int/sites/ilearn/documents/prevention%20of%20harassment%20faqs.pdf http://intranet.who.int/sites/paac/documents/policy%20on%20preventing%20abusive%20cond uct%2001032021.pdf

- 2. Front-line workers who are being trained are required to be embedded within national programmes and are thus likely to be retained and enabled to carry out further research that benefits their country's health system. The application process required that selected applicants were 'embedded' within the health system in an effort to safeguard the retention of those trained.
- 3. An online alumni network allows regular contact and monitoring of those already trained through the programme and this has enhanced community spirit and solidarity in tackling AMR. It also provides a safeguard to maintain the partnerships built through the SORT IT programme and enables resources to be mobilized when needed.
- B. Safeguarding assets from theft, fraud, etc:
- 1. In terms of financial processes, we perform quarterly follow-up of actual against planned expenditures and forecasting is done by all WHO country offices in target countries. Our finance focal point also performs a quarterly review of expenditures and provides feedback to countries. WHO's approval process for expenditures is in place based on budget lines.
- 2. In terms of downstream implementing partners, we work through performance-based contracts with deliverables. Payment is made on a staggered basis and linked to deliverables.
- 3. WHO procurement measures include tenders for hotels and procurement of supplies, with strict internal procedures that ensure competitive prices
- 4. Quarterly meetings with WHO country office staff involved with the AMR–SORT IT project to highlight successes and challenges and slate the way forward.
- 5. Improved project monitoring through a TDR online tool (e-TDR).

4.4 Please summarise any activities that have taken place to minimise carbon emissions and impact on the environment across this funding call.

We have developed a virtual training platform which provides an alternative 'online' means of training during the COVID-19 pandemic. This would be of wider benefit in reducing airline flight related carbon emissions in 2021 and beyond. Going forward, we will use the experience to introduce a hybrid approach of face-to-face and online sessions for training and other meetings and workshops. This would help to considerably reduce carbon emissions in the future.

5. Delivery, commercial and financial performance

5.1 Performance of awards on delivery, commercial and financial issues

Expenditure in the year 2021 was $\pounds 2.1$ million (with an additional $\pounds 0.145$ million committed costs). There was an underspend of $\pounds 300\ 000$, of which $\pounds 140\ 000$ is due to timing and will be used in 2022 and $\pounds 160\ 000$ (due to savings on face-to-face AMR country programme management meetings and SORT IT courses) which will be reallocated for reference laboratory support and laboratory supplies in 2022. The total project revised planned costs are $\pounds 7\ 329\ 331$, which is 89% of the total original budget of $\pounds 8.2$ million.

In 2021, all 12 training modules of the African, Asian and Latin American SORT IT capacity building were conducted online due to COVID-19, resulting in cost savings overall. With a no-cost extension agreed until December 2022, all performance-based contracts with downstream implementing partners were extended into 2022 to ensure that all desired deliverables are met.

Salaries of WHO country office staff and funding of AMR coordination activities continued in countries as these were critical to uphold ongoing front-line activities of the COVID-19 response by enhancing health worker protection and laboratory capacity, strengthening surveillance and improving awareness in preventing COVID-19. There is a strong synergy between the AMR response and the COVID-19 response, which will continue to prove vital for continuing, with greater strength, the AMR activities in 2022.

Procurement of reference laboratory supplies and equipment were slowed down as the over-riding priority for countries continued to be on the COVID-19 response.

A set of options for proposal and case for a 12 month no-cost extension (NCE) to December 2022 was accepted and this will now ensure that all planned activities of the AMR–SORT IT programme will be implemented. The value for money will be enhanced and reputational risks minimized through this NCE.

- 5.2 Transparency this question applies to funding schemes which include transparency obligations within their contracts.
 - Delivery partner to confirm whether or not International Aid Transparency Initiative (IATI) obligations have been met (please refer to_ <u>https://iatistandard.org/en/iati-standard/</u>). Yes
 - □ If these are not yet met, please outline the reasons why.

TDR acknowledges and supports the requirements of the International Aid Transparency Initiative Standard (IATI Standard). WHO, as a signatory to IATI, shall publish information and data in accordance with the IATI Standards. In accordance with this commitment, WHO publishes information on its website (https://extranet.who.int/programmebudget/) which facilitates the traceability of contributions from the Government of the United Kingdom of Great Britain and Northern Ireland to WHO and down to its major offices. TDR also publishes information on grants and contracts awarded as an annex to the annual reports of each Strategic Priority Area (research for implementation, research capacity strengthening and global engagement), upon approval from the TDR governing bodies. These reports are published on TDR's website.

6. Monitoring, evaluation and learning

6.1 Monitoring

 Monitoring activities throughout the review period and how these have informed programming decisions.

Robust inbuilt metrics. All SORT IT trainings are routinely assessed through an in-built monitoring system which includes: achievement of the 80-80-80-80 performance targets - 80% participant satisfaction score; 80% successful completion of all milestones; 80% publication record within a maximum of 18 months of manuscript submission; and 80% of research assessed for impact on policy and practice through surveys. We also assess the number of institutions from HICs and LMICs involved in collaborative partnerships and the capacity of alumni to continue undertaking and publishing operational research beyond the life of the programme.

Equity. Gender equity, age, nationality, LMIC leadership and north-south, south-south collaborations are reported each quarter on a global level. Mapping of geographic coverage is also included.

Quality of generated evidence. To ensure quality control of generated evidence, TDR routinely assesses the quality of reporting of SORT IT publications according to international standards. The last comprehensive assessment of SORT IT showed that 90% of publications (n-392) involving 72 countries and 24 thematic areas showed excellent reporting quality.

Availability of SORT IT resources on the TDR website. All publications and policy briefs generated through SORT IT are available in an open access format on the TDR website.

https://tdr.who.int/activities/sort-it-operational-research-and-training

Financial reports. Quarterly financial and activity updates with WHO country offices and partners through written reports and virtual means.

Performance-based contracts. All delivery partners have performance-based contracts which are paid on achievement of deliverables. Due to COVID-19 delays, all contracts with implementing partners will be extended into 2022, with payments being deferred as relevant.

6.2 Evaluation plans and activities that have taken place across awards throughout the review period.

All SORT IT training modules are routinely evaluated for quality and improvement through participant surveys by those trained. We also receive feedback from mentors, WHO country offices and others who participate in the SORT IT activities and suggestions are critically reviewed by the SORT IT technical and organizational committees and taken forward as appropriate. Within 18 months of study completion, we will systematically evaluate completed research studies for impact on policy and/or practice.

6.3 Learning

TDR collects regular feedback and critical reflection on SORT IT activities and courses from research participants, members of AMR committees, SORT IT mentors and WHO country office staff. A dynamic and adaptable model allows integration of "change for the better". For example, we continue to adapt the SORT IT curriculum and training approaches through embracing a 'learning by doing' philosophy. Innovations have been generated from critical reflection of what SORT IT does. For example, development of a virtual training platform, a module on communication of research output, an approach to shorten publication time – etc has been achieved through formal assessments and there have been several publications on operational research on SORT IT itself.

In terms of how adaptations, after each training module, a formal evaluation is done by all research participants and mentors who indicate what they feel 'works well' and 'what needs to be improved or changed'. The recommendations are then included in the module reports as actionable items for the SORT IT technical and coordination team. For example, the challenges faced by using the SORT IT online training platform such as; coping with significant time differences for meetings between participants from different parts of the world; difficulties in providing timely analysis of data and review of manuscripts; and 'online fatigue' compelled the technical and organizational teams to double the mentor pool so that each research project is led by one senior mentor and also increase the number of days for some modules. To support research teams working on manuscript writing, we also included a data support person so that the writing team is not overloaded with the additional burden of data analysis.

Another example is the decision to split all plenary review sessions of manuscripts (involving 25-30 people) from one plenary to two separate plenaries. This was based on the fact that review of a minimum of 12 research studies (each for 25 minutes) resulted in five hours of plenary and the associated fatigue resulted in reduced quality of plenary inputs. Splitting to two plenaries each with six studies each reduced the total plenary time to 2.5 hours.

Key lessons

Continued engagement with multisectoral national AMR committees and WHO country offices both in the planning and during COVID-19 disruptions and thereafter allowed all stakeholders to be continually engaged in the AMR-SORT IT work and ensuring its synergy with the COVID-19 response. This approach allowed all implementing partners to rapidly come on board during the implementation of the catch up phase in 2021, after cessation of all training activities in 2020. This impetus allowed us to complete and publish 35 research projects and start 37 new projects in Africa, Asia and Latin America.

The COVID-19 pandemic remained the most important challenge in 2021 and catching up with implementation delays required the need for more time through a no-cost project extension that was discussed and agreed upon with DHSC. In 2021, we were also compelled to hasten data collection and pack training modules closely together which increased workload as all front-line had to simultaneously cope with COVID-19 related activities. We will need to consider contingency measures in the event of future outbreaks. The online platform currently being used is one of the measures to mitigate the impact of a future outbreak on implementing trainings on the same scale. Other measures include having a larger pool of SORT IT mentors as many become unavailable during outbreaks. A stand-by list of replacement candidates is also important in the event the initial selected researcher falls ill due to COVID-19 or other illness. Providing support to employ additional data support persons to cope with over-riding COVID-19 related priorities is also important.

Conflict and political turmoil such as in Myanmar is also an issue to consider in risk assessments. The unstable political situation in Myanmar continued in 2021, including civil disobedience with many health workers being detained and arrested. The United Nations guidelines for Myanmar stipulates that meetings and capacity building activities with the de facto authorities should be avoided. It was thus not feasible to consider a national SORT IT cycle in Myanmar in 2021. To maximize the overall value for money of the AMR–SORT IT project, we brought forward and launched an AMR–SORT IT programme in Ghana in November 2021. Ghana is one of the agreed target countries for the project and the WHO country office team, the national AMR coordinating committee and the SORT IT partnership have welcomed this move. Rapid pivoting of activities from Myanmar to Ghana was possible due to the continued excellent dialogue with both the WHO offices in Myanmar and Ghana. We will need to continue using WHO country offices as our antennas in countries. As we continue to learn from the COVID-19 pandemic, we will continue to consider other contingency measures in 2022 and beyond.

6.4 Key milestones/deliverables for the coming year

Award	Key milestones/deliverables for coming year
AMR–SORT IT programme	Completion of 36 studies in Colombia, Ecuador, Ghana and Sierra Leone (total research projects expected to be completed during the award = 72)
	Publication of the 36 completed studies and effective knowledge dissemination to stakeholders and decision- makers to foster uptake of research findings. This will include building capacity of research participants to develop materials for a lay audience, PowerPoint presentations and "one minute" summary speeches of research findings.
	Support WHO country offices in target countries in Asia and Africa and the Americas to implement recommendations of completed research and assess its impact on policy and/or practice.
	Continue to accelerate the implementation of research grants that were provided to specific institutions in five countries to support locally driven prospective AMR research activities and strengthen the research capacity of local institutions.

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