EXECUTIVE REPORT

EVALUATION OF THE COMMONWEALTH PARTNERSHIPS FOR ANTIMICROBIAL STEWARDSHIP PROGRAMME

Prepared for the Tropical Health and Education Trust (THET)

Final Report | 11 August 2020

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This evaluation has been informed by the views of health partnership leads and Chief Pharmaceutical Officer's Global Health Fellows both within the NHS and within the implementing LMIC organisations who participated in the Commonwealth Partnerships for Antimicrobial Stewardship (CwPAMS) Programme administered by the Tropical Health and Education Trust and by the Commonwealth Pharmacist Association. Ingentium Limited wishes to express its gratitude to all of the individuals who generously gave their time to the evaluation process, many of whom were also serving on the frontlines of health institutions in the UK and Africa during the COVID-19 pandemic. Furthermore, Ingentium Limited wishes to sincerely thank Ama Bartimeus, Sara Mahjoub, Will Townsend and Beatrice Waddingham – of THET, as well as Diane Ashiru-Oredope and Nikki D'Arcy of CPA for their resolute support and cooperation throughout the entire evaluation process, particularly in working with us to find solutions to the various challenges caused by COVID-19 disruptions.

ABBREVIATIONS, ACRONYMS & INTERPRETATIONS

AMR	Antimicrobial resistance
AMS	Antimicrobial stewardship
CPA	Commonwealth Pharmacists Association
CPhO GH Fellowship	Chief Pharmaceutical Officer's Global Health Fellowship
CwPAMS	Commonwealth Partnerships for Antimicrobial Stewardship
DHSC	(UK) Department of Health and Social Care
CPHO GH FELLOWS/FELLOWSHIP	Refers to the Chief Pharmaceutical Officer's Global Health Fellows/Fellowship
GESI	Gender Equality and Social Inclusion
GPPS	The Global Point Prevalence Survey is a standardized tool that is used worldwide to characterize inpatient AMU.
HP / HPs	Health Partnership(s)
IPC	Infection prevention and control
LMIC	low- and middle-income countries, as categorised by the World Bank
MoH	Ministry of Health
MTC	Medicines and Therapeutics committee
NAP(s)	Refers to National Action Plans for Antimicrobial Resistance
Programme	Refers to the CwPAMS Programme
Project / Projects	Refers to individual HPs and the work for which they were funded under CwPAMS. For the avoidance of doubt any reference to "Projects" shall be deemed to include the work carried out under multiple HPs funded under CwPAMS.
THET	Tropical Health and Education Trust
ToR	Terms of reference

INTRODUCTION

THET (Tropical Health and Education Trust) has commissioned Ingentium Limited (Ingentium/us/we/our) to carry out the evaluation of the Commonwealth Partnerships for Antimicrobial Stewardship Programme (CwPAMS/Programme). The evaluation seeks to review and assess how and to what extent CwPAMS realised its Programme objectives across 12 health partnership projects (HPs/Project(s)). Based on assessing reports and interviews, this executive report and the attached annexures (collectively, the Report) set out our findings with respect to the individual HPs, and the CwPAMS Programme as a whole. Key stakeholders and audience for this Report include the Fleming Fund and its implementing partners, UK Department of Health and Social Care (DHSC) and the respective ministries of health (MoH) in Ghana, Tanzania, Uganda and Zambia.

1. CWPAMS PROGRAMME BACKGROUND

1.1. AIMS AND OBJECTIVES

CwPAMS is a collaborative grant-making Programme between THET and the Commonwealth Pharmacist Association (CPA). The Programme is part of the Fleming Fund, a £265 million initiative funded by DHSC. The initiative's ultimate aim is to see an increase in the rational use of antibiotics, and subsequent reduction in morbidity and mortality associated with antimicrobial resistance (AMR).

CwPAMS aims to contribute to the achievement of objectives 2, 6 and 7 of the Fleming Fund:

- **Objective 2:** Developing and supporting the implementation of protocols and guidance for AMR surveillance and antimicrobial use;
- **Objective 6:** Collating and analysing data on the sale and use of antimicrobial medicines;
- **Objective 7:** Advocating for the application of data to promote the rational use of antimicrobials;

1.2. THE HEALTH PARTNERSHIP APPROACH

The Health Partnership Approach is a model for improving health and health services based on ideas of co-development between actors and institutions from different countries. Health partnerships are defined as long-term partnerships between UK health institutions and their counterparts in LMICs and are based on ideas of reciprocal learning and mutual benefits. [1] These partnerships seek to address priority gaps and needs identified by the LMIC partners, and usually focus their activities on a series of projects that support human resources for health development through the training and education of healthcare workers in the LMIC partner institutions. Activities, especially when the partnership has been well-established over a number of years, can then broaden to include strengthening aspects of a health system, such as clinical pathways and policies, and a scale up of their activities.[2] The health partnership approach enables institutions in different countries to work more collaboratively and at scale, because it is grounded in the concept of mutual benefit, co-development and co-learning.

In support of this, THET has developed "Principles of Partnership[3]" which are hallmarks of good practice for health partnerships and the way they manage projects. They include working consistently within local and national plans and planning and implementing projects together with a clear commitment to joint learning.

[1] THET Strategic Plan 2016-2021.
[2] CwPAMS Call for Applications: Questions and Answers
[3] https://www.thet.org/principles-of-partnership/

CwPAMS reports in their official documentation that through the Department for International Development (DFID) funded Health Partnership Scheme, which THET manages, it has been possible to demonstrate that this model of partnership and capacity development offers an effective, sustainable and value for money approach to strengthening national capacities, whilst also resulting in the strengthening of the UK workforce that is involved in this work.[4]

1.3. LOCATIONS, THEMES AND DURATION OF THE HEALTH PARTNERSHIPS

The CwPAMS programme comprises 12 HPs between UK health institutions and their counterparts in four Commonwealth countries: Ghana, Tanzania, Uganda and Zambia, which have been funded to achieve The Fleming Fund objectives. The HPs consist of health workers and experts from UK and LMIC institutions who volunteered their time to co-develop strategies and share skills and knowledge to address priority health system issues relating to AMR and antimicrobial stewardship (AMS). Through this partnership approach, the HPs were expected to strengthen the capacity of the national health workforce and institutions in the target LMICs.

The Projects were expected to target themes and areas of investment currently not being explored by other Fleming Fund funded projects. With support from the Fleming Fund, National Action Plans (NAPs) on AMR, including AMS activities, have been developed in all countries. NAPs detail national-level plans and strategic interventions to promote public awareness for AMR, improve infection prevention and control (IPC), implement AMR surveillance and promote appropriate access to and use of antimicrobials. HPs were therefore to focus on AMS particularly with respect to the following themes:

- AMS, including building surveillance (**required);**
- Antimicrobial pharmacy expertise and capacity and (**required);**
- IPC, if contextually appropriate.

The Projects began in February 2019 and were originally expected to last 15 months, ending in April 2020. As of March 2020, the HPs have been granted no-cost extensions until January 2021 (please see Section 4.3-Limitations).

Table 1 lists out the 12 HPs, including their Project title, participating institutions and Project value.

[4] CwPAMS Call for Applications: Questions and Answers

Table 1 A Description of the 12 Health Partnerships[5]

ID	UK Lead Partner	LMIC Lead Partner	Country	Project Title	Grant £
A02	Norfolk and Suffolk NHS Foundation Trust	The Assemblies of God Hospital, Saboba	Ghana	Optimising the use of antibiotics and increasing knowledge of antimicrobial resistance in a rural healthcare setting in Northern Ghana and wider community	£29,500
A04	UK Faculty of Public Health	Ghana Public Health Association	Ghana	To strengthen Antimicrobial Stewardship through improving surveillance and building sustainable capacity in Ledzokuku Krowor Municipal Assembly [LEKMA] Hospital, Ghana.	£27,628
A05	North Middlesex University Hospital NHS Trust	Korle-Bu Teaching Hospital	Ghana	Building Professional Capacity and Sustainability to Deliver Effective Antimicrobial Stewardship and IPC Programmes in Accra, Ghana.	£21,151
A07	University College London Hospitals NHS Foundation Trust	University of Health and Allied Sciences	Ghana	Enhancing Hospital Pharmacists Roles to support the Delivery of Antimicrobial Stewardship programmes in Volta Regional Hospital, Ho, Ghana	£29,985
A11	Healthcare Improvement Scotland	Ghana Police Hospital	Ghana	Utilising a Scottish triad approach to developing and implementing antimicrobial stewardship in Ghana and Zambia: Information, Education, Quality Improvement	£28,640
B01	Cambridge University Hospitals NHS Foundation Trust	Makerere University and Mulago National Referral and Teaching Hospital	Uganda	Kampala Cambridge Antimicrobial Stewardship and Infection Prevention and Control project	£74,180
B02	University of Sussex; Brighton and Sussex Medical School	University Teaching Hospital, Lusaka	Zambia	Championing Pharmacists as Antibiotic Guardians in Zambia; the Brighton-Lusaka Pharmacy Link Initiative.	£55,941
B03	University of Salford	Pharmaceutical Society of Uganda	Uganda	Anti-Microbial Resistance and Maternal Sepsis in a Ugandan Regional Referral Hospital	£60,000
B08	Health Education England	Gulu Regional Referral Hospital	Uganda	Establishing Effective Antibiotic Stewardship in Gulu Regional Referral Hospital (GRRH), Northern Uganda	£74,495
B09	Northumbria Healthcare NHS Foundation Trust	Kilimanjaro Christian Medical Centre	Tanzania	Interventions that are designed to change antimicrobial use for better patient outcomes and avoiding AMR	£65,465
B10	Nottingham Trent University	Makerere University School of Public Health	Uganda	Strengthening antimicrobial stewardship in Wakiso district, Uganda	£59,998
B12	London School of Hygiene and Tropical Medicine	Makerere University College of Health Sciences and Infectious Diseases Research Collaboration (IDRC)	Uganda	Capacity Sharing for AntiMicrobial Stewardship (CaSAMS) through the medicines and therapeutic committee at Jinja hospital	£71,700

[5] Seven of the 12 HPs (B01, B02, B03, B08, B09, B10, B12) represent established partnerships; however, within this group of established partnerships some the individuals that made up the UK and LMIC partners (B02, B08) had not previously worked together prior to CwPAMS

2. PURPOSE & SCOPE

The evaluation seeks to review and assess how and to what extent CwPAMS realised its Programme objectives across the 12 HPs carried out between quarters one to three of the Programme duration i.e. February to October 2019; this is the primary time period that this evaluation assessed. There was limited information pertaining to the Programme beyond this point (see Section 4.3 - Limitations to the Evaluation), therefore information pertaining to quarters 4 and 5 of the Programme that has been included in this evaluation has been limited to beneficial higher-level effects resulting from activities that took place during the first three quarters of the Programme.

The findings of the evaluation and the lessons learned will serve to inform THET, CPA and key stakeholders, including DHSC and the Fleming Fund on the successes, challenges and the next steps for the CwPAMS health partnership approach, including the prospects of using the approach to scale up and establish similar partnerships elsewhere. The full scope and criteria for carrying out this evaluation are set out in detail within the Terms of Reference (ToR) which readers are encouraged to read first in order to gain better contextual understanding of this report (see Annex A).

Our evaluation will seek to answer the following specific questions, as prescribed by THET, focused on CwPAMS Programme outcomes:

PROGRAMME OUTCOME QUESTIONS

1. To what extent have LMIC healthcare Institutions and the LMIC health workforce demonstrated improved practice related to AMS and prescribing practice?

2. Are AMS strategies, guidelines and tools in place and being used in each LMIC healthcare institution? How useful are they?

3. Have NHS staff demonstrated improved leadership skills and understanding of the global context of AMR in their work?

In order to answer the above Programme Outcome Questions, the evaluation will be guided by three Overarching Evaluation Questions as specified by THET and set out below:

OVERARCHING EVALUATION QUESTIONS

1. ''Proof-of-concept''
   a. To what extent has the CwPAMS Programme improved antimicrobial stewardship in LMIC partner healthcare institutions?

   b. Does the health partnership approach improve antimicrobial stewardship in LMIC partner healthcare institutions and staff?

2. What is the value to the NHS of its volunteers participating in the CwPAMS project, in particular how are skills and experiences absorbed within the UK healthcare institution, and is there evidence of a "skills *exchange*" between UK volunteers and their counterparts in the LMIC?

3. What is the potential for scaling up AMS in National AMR Action Plans?

The continuation of this report will provide an overview of the methodology utilised for assessing the evaluation's findings, an assessment of the CwPAMS Programme performance with respect to its

objectives, notable lessons learned, and where appropriate – recommendations which may help improve the Programme's performance in terms of future activities. Evaluations of individual HP performance under the CwPAMS Programme is included as an annex to this report (see Annex C).

3. METHODOLOGY

Our strategy for evaluating the CwPAMS Programme and individual HPs is based on the three Overarching Evaluation Questions (see Section 3 - Purpose and Scope), the OECD-DAC Evaluation Criteria and indicators that were developed internally (see Annex B - Evaluation Framework) which correlate with the former two. A more detailed explanation of our review is provided below.

The evaluation took place between April and July 2020. It consisted of three main phases- (1) Planning, (2) Review and Analysis and (3) Summary of Findings/Final Report. All the information obtained was assessed and evaluated using an objective numerical scorecard. This approach enabled us carry out a "multidimensional" evaluation of the Programme as described further below. Figure 1 below summarises the key steps in our evaluation approach. For the benefit of the reader, it is noted that this report is preceded by an Inception Report which sets out the evaluation approach and report structure in further detail.

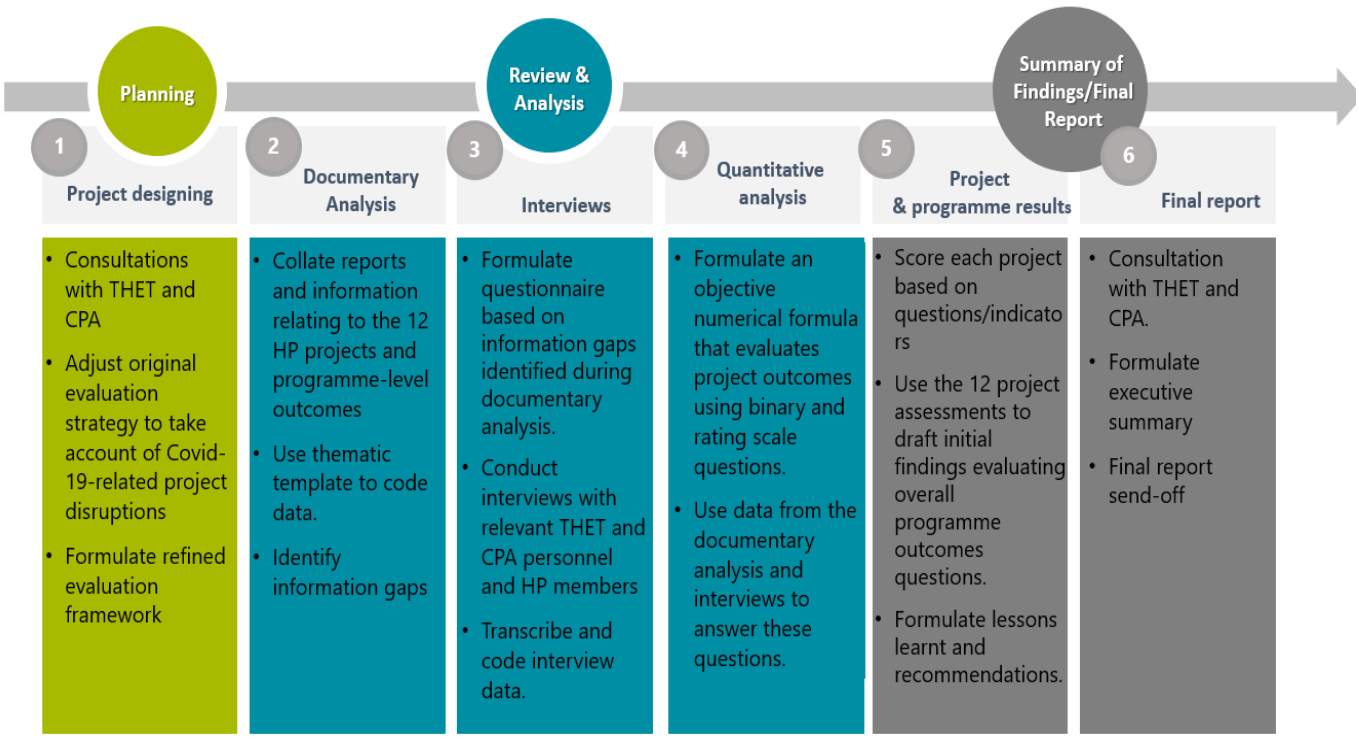

Figure 1 Key Evaluation Phases

3.1. DATA COLLECTION METHODS AND SOURCES

This evaluation employed a mix method research approach. This consisted of (i) qualitative research methods in the form of documentary analysis, supplemented by interview and questionnaire data and (ii) quantitative research methods, in the form of applying a numerical formula to score individual HPs to

inform the Programme's overall performance (see Section 4.2 - Analysis and Evaluation). Below is a summary of key data collection methods and sources relied upon to complete the evaluation:

a. **Documentary review** of the following relevant reports provided by THET and CPA;
   i. Project-level documents including HP proposals, monitoring visit reports, financial reports and quarterly narrative reports; and
   ii. Programme-level reports including the CwPAMS Logframe, Quantitative data spreadsheet, DHSC reports, Pre and post Inception Workshop Volunteer Survey draft, Change Exchange reports, CPA and THET reports, AMS Checklist results and THET CPA Dissemination of Findings slide show.

b. **Interviews** were semi-structured and conducted through web-conferencing or teleconferencing. Most of these interviews were carried out on a one-to-one basis, but a few of the interviews involved three to six participants. Questions were prepared and shared with most interviewees ahead of time. Interviews were conducted with the UK and LMIC HP leads, Chief Pharmaceutical Officer's Global Health Fellows (CPhO GH Fellows) and key staff from THET and CPA. Interviewees were assured anonymity insofar as this report does not attribute any findings to anyone by name. A full list of interviewees can be found in Annexure E.

c. **Questionnaires** sent via email to THET Country Directors and other persons who were unable to commit to an interview.

d. **Follow-up emails** were sent to several stakeholders to either clarify information, resolve data inconsistencies or incongruencies, or request certain additional documentation.

3.2. ANALYSIS AND EVALUATION

Our Evaluation Framework (see Annexure B) was designed to assess the 12 HPs individually, as well as the Programme collectively, as is described below.

a. With respect to individual HPs:
   i. The extent to which each HP achieved its own Project objectives; and
   ii. How well each HP performed with respect to the OECD-DAC evaluation criteria.

b. With respect to CwPAMS:
   i. How well CwPAMS performed against its Programme Outcomes (see Section 3 - Purpose and Scope); and
   ii. The extent to which CwPAMS achieved Programme (Fleming Fund) objectives.

The Evaluation Framework is underpinned by an extensive list of questions and indicators which Ingentium developed with input from THET and CPA, and sought to address/assess for each individual HP based on the data it obtained. These questions and indicators were fixed across all 12 HPs to ensure consistency in the evaluation, with the exception of some questions/indictors being specific to the Programme only. Each individual question/indicator was associated (or tagged) against one of the five OECD-DAC Evaluation Criteria, and similarly also associated to one of the three Overarching Evaluation Questions.

Using the questions/indicators described above, a scorecard system was developed in order to rate each HP's performance with respect to each of the five OECD-DAC evaluation criteria. A similar scorecard system

was developed in order to ascertain the extent to which each individual HP, and collectively the Programme, performed with respect to the three Overarching Evaluation Questions. In order to calculate an HP's rating with respect to an OECD-DAC Evaluation Criteria, the sum of the scores (for all of the questions/indicators relating to that OECD DAC Evaluation Criteria) was divided by the number of questions asked. The higher the value of the resulting number, the better an HP's rating with respect to that OECD-DAC Evaluation Criteria. Similarly, in order to calculate the Programme's performance, all relevant question/indicators scores obtained on the HP level were collated and averaged.

Ingentium used a five[6]-tier traffic light system to rate its findings (and scores) across the 12 individual HPs as well as the Programme. This is set out below in Figure 2:

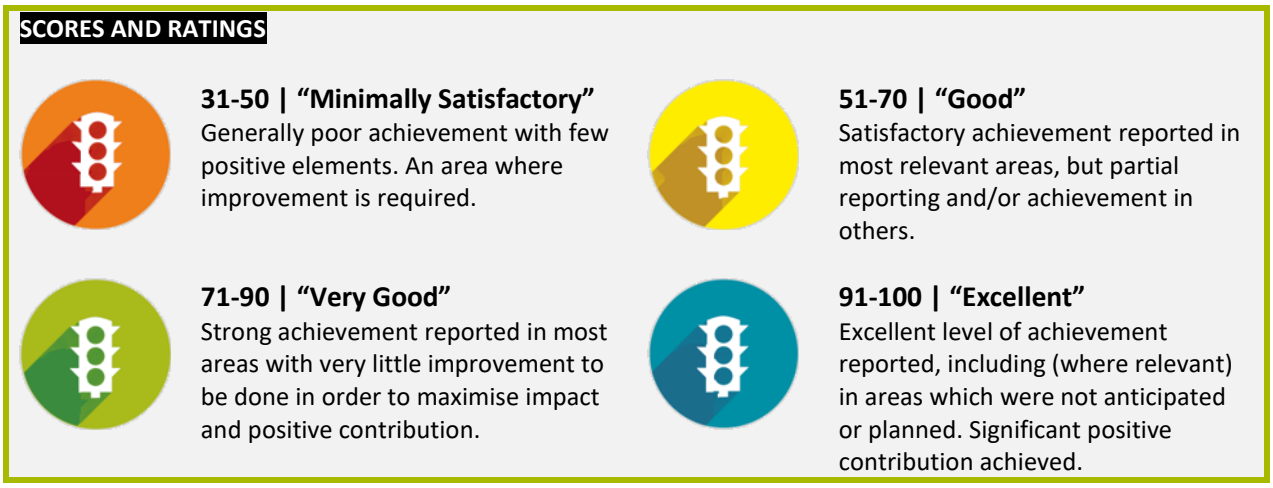

Figure 2 Score and ratings description

3.3. LIMITATIONS TO THE EVALUATION

There are a number of limitations and caveats readers of this Report should consider whilst reviewing the Evaluation results and the individual HP *Snapshots* which are attached as Annex C. These limitations and caveats have been set out below:

a. **COVID-19 Pandemic Programme Disruption**: The global spread of COVID-19 and its demand on health system both in the UK and in the LMICs has resulted in HPs being granted a no-cost extension until January 2021. Furthermore, the pandemic also affected participant availability as many of the volunteers involved also serve as front-line health workers. Along with disruptions to HP activities, the pandemic also presents a challenge to the evaluation resulting in the alteration of the methodology to remove country visits, and face-to-face interviews and replace these with surveys or questionnaires. In order to mitigate the effects of the aforementioned disruption, it was agreed that the evaluation would be primarily undertaken through desk-based research incorporating additional information from online-based interviews and questionnaires sent via email. Special care and consideration has been taken to ensure that the evaluation carried out by us did not prejudice the CwPAMS Programme and individual HPs where unanticipated external factors, such as the COVID-19 pandemic, hindered the carrying out of activities and achievement of objectives.

[6] It is noted that this evaluation did not identify any Project or Programme elements that scored below 31 and therefore the lowest-tier "Poor" is not relevant or featured in this Report.

b. **Missing Q4 and Q5 Narrative Reports**: Following feedback from the HPs, a decision was made by THET/CPA to have HPs forgo reporting on quarter 4 activities and instead include this information in the final quarterly narrative report at the end of Q5; however these reports were not possible due to disruptions brought on by COVID-19 (see above). The lack of reports from Q4 and Q5 caused significant gaps in information that would have been relevant to this evaluation. In order to mitigate the effects of these gaps, it was agreed that the evaluation would proceed as an interim evaluation of the Programme from Q1 to Q3 to assess the extent to which the CwPAMS Programme achieved the objectives established at its inception. While the report makes reference to certain activities and interventions that occurred after Q3 (gathered through interviews and feedback from THET and CPA) the information has been limited to beneficial activities that demonstrate the anticipated/unanticipated higher-level effects brought about by the CwPAMS Programme and should in no way been seen as a complete evaluation of CwPAMS Programme during Q4 and Q5. Final results will be factored into the overall evaluation by way of an addendum compiled by THET, at a later date.

4. PRESENTATION OF PROGRAMME LEVEL FINDINGS

This section presents our findings from the CwPAMS Programme evaluation. Quantitative assessment of the Programme was based on a scorecard system which used the answers to sub-question/indicators associated to each of the three Overarching Evaluation Question to ascertain the extent to which each individual HP, and collectively the Programme, performed with respect to the three Overarching Evaluation Questions. The collective Programme-level results are displayed in Figure 3 below. Further analysis detailing the collated individual HP Scores can be viewed in Annexure D.

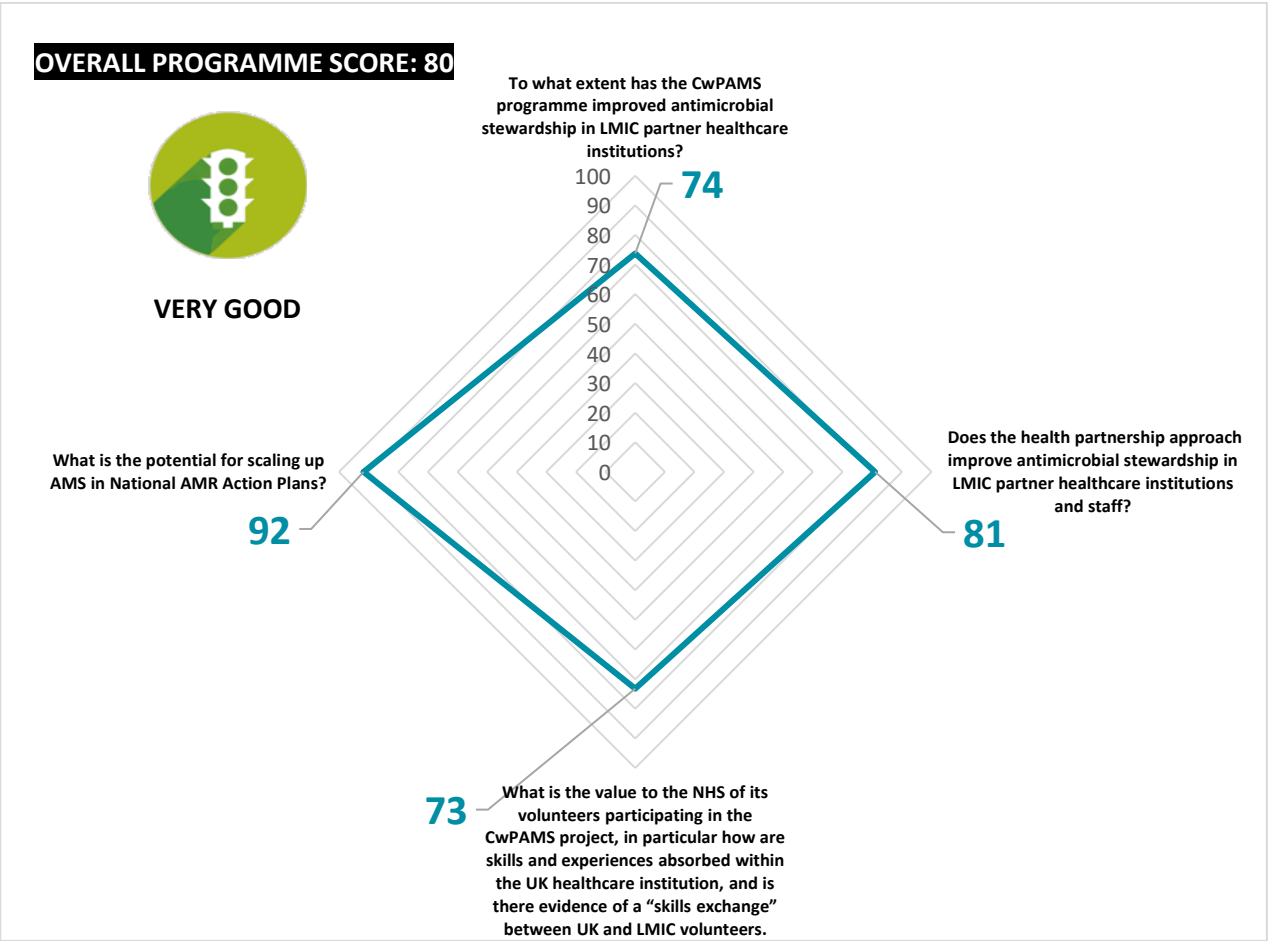

Figure 3: Overall Programme performance across the three Overarching evaluation Questions (note that Proof of Concept is represented as two separate questions)

The subsequent sections present our findings for each of the three Overarching Evaluation Questions. Key findings are outlined, followed by a score and/or justification for each sub-question/indicator associated to the Overarching Question and an analysis of the score that concisely summarises the information we obtained from various sources which informed our evaluation. We note that subsections that are informed by qualitative questions or where data could not be quantified have not been scored; however, this data has still informed the summary of key findings for the three Overarching Evaluation Questions and been factored into the overall Programme evaluation. Furthermore, no significant baseline data was available for utilisation as part of this evaluation.

The section concludes with a summary of the findings expressed in terms of their correlation with the OECD-DAC Evaluation Criteria. Detailed results of each HP's performance against the OECD-DAC Evaluation Criteria along with their successes and challenges can be found in Annexure C.

4.1. OVERARCHING EVALUATION QUESTION 1

'PROOF-OF-CONCEPT"

To what extent has the CwPAMS Programme improved antimicrobial stewardship in LMIC partner healthcare institutions?

Does the health partnership approach improve antimicrobial stewardship in LMIC partner healthcare institutions and staff?

SUMMARY OF KEY FINDINGS | AGGREGATE SCORE: 78 (VERY GOOD)

The CwPAMS Programme has improved the AMS in LMIC partner health care institutions with the health partnership approach being a key factor to success

- HPs were able to meet over 50% of their objective and outcome targets by Q3, indicating that the Programme, as a whole, was on track to achieving its outcome targets by its original anticipated end date (April 2020), however performance of work and achievement of objectives was not always in accordance to agreed timescales.
- There is reported evidence of improved practise relating to AMS within LMIC institutions, most notably, HPs successfully trained the 253 pharmacists out of the 1500 healthcare workers reached in LMIC institutions (a key outcome for CwPAMS) and there is evidence of upskilling and role creation for pharmacists across the Projects;
- LMIC healthcare workers were trained in data collection and conducting the global point prevalence survey (GPPS). Prior to the CwPAMS Programme, only one hospital had ever conducted GPPS, this increased to 10 hospitals by the end of Q3.
- The health partnership approach enabled HPs to successfully train and empower LMIC healthcare institutions in AMS. Notably, through having a balance of experience and expertise amongst UK and LMIC partners and placing hospital staff at the center of their approach, HPs were able to generate significant, positive intended higher-level effects.
- THET and CPA provided substantial support to the HPs which included the provision of technical assistance and Project reporting and monitoring support.

4.1.1. TO WHAT EXTENT HAS THE CWPAMS PROGRAMME IMPROVED ANTIMICROBIAL STEWARDSHIP IN LMIC PARTNER HEALTHCARE INSTITUTIONS?

4.1.1.1. How relevant was the support of CPA and THET, in enabling LMIC/UK institutions to achieve the HP goals?

76 **Very Good**	Strong evidence of THET and CPA providing integral support to the implementation of the HP Projects. However, there is some room for improvement.

a) Did the Partnership receive the expected support from CPA?

CPA provided technical assistance to support the preparation of all of the HPs in the Programme and to complement partnership activities in-country through the provision of additional technical expertise and direct support as and when needed. This included but was not limited to, the initial scoping for the

Programme, the provision of the AMS Checklist tool and other training tool kits, training on the collection of surveillance data for the GPPS, supporting the development of evidence-based standards, guidelines, protocols, the development of a mentorship programme to support sustainability and a networking platform for CwPAMS containing a repository of resources with a forum component to assist partners linking to share learning and resources. CPA support towards the HPs was generally 'behind-the-scenes.'

CPA's support was integral to the success achieved by the HPs. All 12 HPs received pre-deployment training which included training on AMS initiatives and good practises in the LMIC context and data collection training for the GPPS. CPA also developed a CwPAMS app to collate all country specific antimicrobial prescribing guidelines in response to feedback from the scoping exercise which revealed that access to guidelines was significantly challenging within hospitals. However, there was low engagement with the app particularly in Ghana during the first three quarters of the Programme, as HPs struggled to familiarise themselves with the app and in certain instances, functions of the app were reported to not be working. Eight of the 12 HPs reported, either through interviews or in their quarterly narrative reports, receiving sufficient bespoke training or materials from CPA during the course of their Project. Examples of this included provision of technical assistance through webinars or emails and the promotion of HP Projects and relevant media on social media platforms. HPs in Uganda were particularly appreciative of the support they received from the CPA International Projects Lead during their monitoring visit. Five of the 23 HP leads interviewed were only able to recognise CPA's support during the inception stage, but outside of this, they struggled to fully appreciate the ongoing support they received from CPA to that received from THET. 10 HPs reported that CPA had aided them in establishing relationships within CPA's network, including other HPs involved in the CwPAMS programme.

In addition to CPA's initial scope of responsibilities, CPA developed in collaboration with the Health Education England, the CPhO GH Fellowship[7] at the request of England's Chief Pharmaceutical Officer. They also led the support and leadership training for the CPhO GH Fellows. 16 NHS pharmacists volunteering as part of the HPs in the CwPAMS programme were appointed as the first CPhO GH Fellows following a competitive application process. The CPhO GH Fellowship aimed to expand the knowledge gained by NHS pharmacists under the CwPAMS programme in ways which would enhance their leadership and project management skills. All HPs, with the exception of one, had a Fellow or Fellows appointed to them. In addition to their roles within the HPs (which were very broad), the Fellows (all of whom were pharmacists) were required, as part of the CPhO GH Fellowship and development, to take a lead with at least one deliverable and to undertake an individual sub-project within their HP. As a result of this, Fellows took several leading roles within the HPs, taking on the responsibility to, for example, undertake the Global Point Prevalence Survey (GPPS), train pharmacists on AMS, IPC and GPPS and support the management of the HP Projects. Nine of the 11 HPs reported that their appointed Fellow(s) facilitated communication between CPA and the HPs and that overall, the CPhO GH Fellowship provided added benefit to the HPs. There is evidence that CPA adequately supported the CPhO GH Fellows, for example, through providing networking opportunities and the creation of a WhatsApp group for information exchange among the CPhO GH Fellows and CPA.

b) Did the Partnership receive the expected support from THET?

As grant managers, THET were responsible for overseeing project management, finances and monitoring and evaluation. 75% of the HPs reported receiving adequate and expected support from THET. All HPs also reported that THET were effective as the first line of communication and answered queries in a timely

[7] See https://commonwealthpharmacy.org/cpho-global-health-fellows/

manner. The country visits by the THET grant managers were highly appreciated by the LMIC partners, however feedback from interviews with UK partners suggests that more support could have been provided to them, especially in regards to context specific issues such as costings, politics and navigating other aid interventions running simultaneously with CwPAMS. For example, HP B02 in Zambia, felt their Project activities within their hospital were limited due to a USAID-funded AMS project taking place at the same hospital. The HP communicated that additional insights on the work of USAID from THET would have been useful to help them to better navigate themselves and their activities within the hospital.

Seven HPs found project reporting to be overly cumbersome, and the level of reporting too complex at the beginning, and time consuming during the course of their Project. However, all HPs received adequate support in completing the quarterly narrative and financial reports and reported being better equipped to undertake the reporting. In anticipation of the level of work required and in response to the feedback from the HPs, THET designed the reporting templates to capture the minimum data required to monitor and evaluate the Programme and to fulfil their obligations to DHSC. Members of the HPs who were interviewed appreciated this effort, although a sentiment was still present that the reporting created challenges considering the size of the grants, the length of Projects and the voluntary nature of roles within the HPs. Lastly, it was felt by the HPs that the initial reporting templates and the monitoring and evaluation approach of the Programme, emphasised quantitative data that didn't always adequately capture the nuances of each individual HP's Project and achievements.

4.1.1.2. To what extent was the CwPAMS Programme designed to meet the needs of its beneficiaries?

98 **Excellent**	Technical scoping studies were undertaken to analyse key AMR priority areas in each country to inform the Programme design. Individual HPs successfully designed their Projects to be in line with the Programme objectives and NAPs.

At the Programme level, scoping studies were undertaken by CPA for each of the focus countries in order to inform the design of the CwPAMS Programme. The scoping studies analysed key AMR priority areas in each country by assessing AMR National Action Plans (NAPs) to identify gaps in AMR initiatives, the results of which informed the requirements and scope of the call for applications. **At the Project level, all of the HPs conducted a local and national level scoping study to inform their Project aims, objectives and activities and as a result all Project activities and objectives were both contextually relevant and in line with NAPs.** Despite all Projects conducting scoping studies, there is evidence that these studies may not have been comprehensive in assessing timescales, risks and other relevant factors, leading to changes and delays in Project activities and outcomes stated in initial plans (see Section 5.1.1.3 for more detail).

In regards to Gender Equality and Social Inclusion (GESI), up to Q3, only 25 female volunteers from LMIC institutions participated in the Programme in comparison to 51 males immediately revealing a lack of gender balance on the LMIC side. This said, it appears that the CWPAMS Programme and the individual HPs did not adequately consider or prioritise gender and social inclusion whilst designing their Projects. Only three HPs (A04, B01 and B08) identified barriers to women participating in and benefiting from the Programme whilst another three HPs (A07, B02 and B03) identified barriers for people with disabilities. HPs were further asked to state, in a few lines, how they would encourage women to take up training within the Projects. Five HPs (A02, A05, A11, B03, B09 and B10) stated their teams or target LMIC workforce were majority women, therefore women would benefit from the training and additionally, women would be encouraged to participate within the Programme as much as possible. Two HPs (A04 and B08) intended to design training sessions around caregivers to minimise barriers to their participation and one HP (B02) stated it would appoint women in Project teams. Finally, one HP (B01) aimed to identify potential barriers

to women on their first in-country trip and two HPs (A07 and B12) did not provide a response to this prompt. Outside of providing opportunities to women, one HP (A07) aimed to address participation barriers for those who are deaf or visually impaired, by introducing basic sign language and the use of tags and brail inscriptions. During interviews, 11 HPs reported that they had integrated GESI into the Projects, often referring to having majority women teams and healthcare work forces in the LMIC institutions. THET Country Directors and some UK leads felt that GESI within the Projects was superficial and did not substantially enhance the opportunities, skills, knowledge and confidence of women, those with disabilities and other marginalised groups. Two UK leads reported that in some instances the voluntary nature of the Programme reinforced existing societal frameworks that undervalue the contributions of women. (see Section 7 - Lessons Learnt).

4.1.1.3. Was the actual timeline of development and implementation realistic? Were the objectives achieved on time?

33 **Minimally Satisfactory**	As of Q3, eight of the HPs were failing to complete activities in accordance with the timescales specified in their work plans, however objectives were on track to be achieved within the duration of the overall Programme

Only four HPs completed activities in line with their initial work plans, the majority of HPs failed to complete activities in the specified timelines due to:

- **Finance and contractual factors**: Financial delays were closely related to delays in contractual arrangements between partners which resulted in delayed starts and in some cases leading to partners to initially self-finance. The Programme timelines did not adequality consider or incorporate the lead time required to get collaboration agreements (including Memorandum of Understandings) in place and how this would affect Project implementation;

- **Ethical approvals**: At the individual HP-level, some HPs failed to consider the requirements and time necessary for ethical approvals leading to the delay of project activities, most notably the conducting of GPPS; and

- **Hospital structures**: Where HPs relied on the Medicines/Drugs and Therapeutics Committees (MTC) in their respective hospitals to complete activities, in several instances these committees were defunct resulting in delays whilst they were re-established. Despite the delays in starting their activities, many HPs were on track to achieving their objectives by the end of the Project duration (i.e. end of the Programme).

4.1.1.4. Were the initial objectives realistic?

63 **Good**	There is substantial evidence that the majority of HPs were able to meet their targets as a result of setting realistic and context specific objectives

Data collected throughout the Programme and the feedback from HPs shows that the initial objectives were realistic. By the ninth month of the Programme, eight HPs had met at least 50% of their targets (A01, A02, A03, A05, A07, A11, B01, B02, B03 and B10) and three of the HPs managed to achieve over 75% of their targets (A04, B08, B09 and B12). Five HPs (A02, A05, B01, B03 and B08)) which were a mix of new and existing partnerships, reported revising project activities and or outcomes informed by the first in-country visit. Other HPs reported that there wasn't any need to make revisions as the scoping and preparatory

planning was adequate. The HPs that struggled to meet their objectives and targets grappled with a variety of challenges further explored in section 5.1.2.3 Notably, 15 out of the 19 HP leads interviewed felt that their objectives were manageable however they agreed that the Programme and Project timeline needed to be extended for any material impact to be observed.

4.1.1.5. To what extent were the objectives achieved?

100 **Excellent**	All Projects addressed the Fleming Fund objectives and recorded achievement of the Programme outputs and outcomes, however the full extent at which the objectives have been achieved cannot be assessed due to COVID-19 disruptions

All projects aimed to address at least two out of the three Fleming Fund objectives that the CwPAMS Programme aimed to achieve. The HPs designed their Projects to the Programme logframe template ensuring that objectives were all the same however indicators were bespoke to each HP. Based on the data provided in the HP logaframes, which fed into the overall Programme logframe, there is strong evidence that the HPs were on track to achieving these objectives by the end of the Programme (April 2020).

In relation to the CwPAMS outcome 1, all HPs have demonstrated the strengthening of LMIC healthcare workforce in the areas of AMS and antimicrobial prescribing practise. Great success was achieved with regards to data collection and conducting the GPPS. Prior to the CwPAMS Programme, only one hospital had conducted data collection to the scale of the GPPS, this has since increased to 10 hospitals by the end of Q3. The Programme, through the training delivered by the HPs with support from CPA, has enabled the LMIC healthcare workforce to collect data for the GPPS and for other similar surveys. The GPPS also enabled the HPs to measure changes in prescribing practises of antibiotics during the course of their projects. At Q3, 11 of the 12 HPs had yet to measure and report changes to prescribing practises, particularly the reduction of broad-spectrum antibiotics, however all intended to do this in Q4 and beyond. One HP (B03) reported improved prescribing practise which was demonstrated by the increase of biological samples being sent to the lab for testing to confirm diagnosis, as well as an improved feedback process between the lab and prescribers. Additionally, the number of LMIC healthcare institutions with: established AMS teams, a pharmacist on the AMS team, functioning formal organisation multidisciplinary structure responsible for AMS (e.g. committee or group) that focuses on or takes responsibility for appropriate antimicrobial use with regular meetings being held and minuted, increased from two to 10 institutions (A02, A04, A05, A11, B01, B03 B08, B09, B10 and B12) by the end of Q3.[8]

For the CwPAMS outcome 2, all HPs have developed and implemented protocols/guidelines for AMR surveillance and antimicrobial use within their hospitals (in LMICs). At the end of Q3 the Programme had developed 15 new or revised documents relating to AMS and antibiotic prescribing practices and seven guidelines and protocols were rolled out in participating LMIC healthcare institutions through awareness campaigns, training, and sharing. This was in a significant change compared to the beginning of the Programme were all 12 HPs reported not having any published AMS protocols.[9]

Lastly, in regards to outcome 3, nine HPs reported that NHS volunteers had demonstrated improved knowledge and understanding of AMS in the LMIC contexts and one HP (A07) reported that its NHS volunteers had demonstrated leadership qualities by developing 16 project and partnership governance documents (the effects on NHS volunteers are further explored in Section 5.2).

[8] Data source: CwPAMS Logframe
[9] Data source: AMS Checklist Tool

The full extent to which Programme objectives and outcomes have been achieved could not be captured in the evaluation as data was not available for the last two quarters of the Programme, but in so far as can be assessed, it appears that the Programme was on track to achieve all of its outputs and outcomes.

4.1.1.6. What is the Programme impact on the pharmacy workforce (upskilling, roles created, inclusion in/leading of AMS teams, policy groups etc.)?

79 **Very Good**	The HPs successfully trained the pharmacy workforces and there is evidence of upskilling and role creation within LMIC health institutions.

In line with the CwPAMS' multidisciplinary approach to AMS and the requirement for Projects to also focus on antimicrobial pharmacy expertise and capacity, the HPs collectively trained 253 pharmacists out of the 1500 LMIC healthcare workers reached by Q3. The training focused on issues of AMS and IPC and actively created roles for pharmacists in AMS teams/committees. 10 HPs (A02, A04, A05, A07, A11, B01, B02, B03, B08, B09 and B10) reported creating new roles or upskilling their pharmacy workforce and eight HPs (A05, A07, A11, B02, B03, B09, B10 and B12) reported forming new links with national pharmaceutical associations as a result of CPA connections. Pharmacists that were part of the CPhO GH Fellowship took several leading roles within their respective HPs, taking on the responsibility to, for example, undertaking GPPS, train pharmacists on AMS, IPC and GPPS and support the management of the HP projects. In a notable example of the empowerment of pharmacists taking part in the Programme, a pharmacist member of B09 was appointed to be the Chair of the National AMS Technical Working Group in Tanzania.

4.1.2. DOES THE HEALTH PARTNERSHIP APPROACH IMPROVE ANTIMICROBIAL STEWARDSHIP IN LMIC PARTNER HEALTH CARE INSTITUTION AND STAFF?

4.1.2.1. What unintentional/intentional benefits did HPs incur through participation in the CwPAMS Programme?

91 **Excellent**	By contributing to the implementation of AMR *National Action Plans* and placing hospital staff and associated decision-makers at the centre of their approach, HPs were able to generate significant, positive intended higher-level effects. They were also able to respond to COVID-19 in a manner which helped establish the value of the CwPAMS Programme with respect to ancillary health challenges

All 12 HPs were able to provide evidence of significant positive, intended higher-level effects. Data from the HP logframes showed that most projects were able to achieve their output and outcome targets thereby generating positive, intended higher levels effects. Most HPs demonstrated this by supporting the implementation of NAPs through improving prescribing and AMR practices and ensuring that LMIC hospitals and healthcare institutions had effective AMS strategies and guidelines in place. In order to achieve these goals (per their project proposals) HPs, particularly the LMIC partners, engaged in continuous interaction and engagement with hospital management, MoH officials and other relevant local AMR groups. The inclusion of health psychology volunteers from The Manchester Implementation Science Collaboration's Change Exchange ('Change Exchange')[10] who worked with four of the HPs educating them on how behavioural science fits with health partnership work for AMS is likely to have contributed to CwPAMS ability to generate positive, intended higher levels effects.

[10] https://www.mcrimpsci.org/

All 12 HPs generated significant positive impact on the LMIC workforce and associated decision-makers. All HPs made the LMIC workforce and local decision-makers the focus of their project activities. Using extensive and interactive training sessions, workshops, mentorship, shadowing and webinars, HPs helped upskill staff members. These teaching sessions were usually planned weeks in advance by both the UK and LMIC leads and teams and made bespoke to LMIC hospitals and staff, with the majority of HPs favouring a 'train the trainer' approach focused on the training of senior staff. Most HPs felt the most effective way to ensure that AMS was placed on the agenda of hospital management and would become a fixed part of the hospital's prescribing practices was to establish or raise the profile of hospital AMS committees/chairpersons. All the HPs who had specified this as one of their key outputs had achieved their target prior to Q5.

Grant B02 scaled up local production of hand-rub formula at University Teaching Hospital when sudden worldwide shortages of hand rub were brought on by the COVID-19 pandemic. As part of their project activities, this HP had funded the establishment of a hand-rub formula manufacturing facility. Prior to COVID19 they were producing approximately ±40 litre/day, this increased to ±200 litres/day at the height of the pandemic. This initiative was also replicated by Brighton and Sussex Medical School in the UK.
The success of this initiative has led to the HP receiving an additional grant from THET to repeat this intervention in three teaching hospitals in Zambia with a plan to spread this to all Health care facilities. In partnership with CPA, this HP also launched a short training video resource for healthcare professionals to guide them on the manufacture of alcohol hand rub in pharmacy manufacturing units. This additional project led by CPA was funded by the Commonwealth Secretariat.

Ten of 12 HPs (A02, A04, A05, A07, A11, B01, B02, B03, B09 and B10) **were able to show that they had generated significant positive, unintended higher-level effects. A number of these effects became particularly apparent during the COVID-19 pandemic** when six HPs (A07, B01, B02, B03, B08 and B12) were able to harness the IPC knowledge and experience gained in their projects to take part in interventions on the production of alcohol-based handwash formula and associated IPC awareness. Often LMIC partners were leading or working in collaboration with key hospitals/local health officials to scale-up interventions or make them a more permanent feature of hospital practices. These interventions were taken up by hospitals and health institutions in both the UK and LMICs. Other examples of unintended higher-level effects include taking advantage of unanticipated opportunities to partner with community groups to raise awareness in schools and universities at the behest of local leaders and securing additional funding to enable HPs to take on activities beyond their budget.

4.1.2.2. *Which factors contributed to the positive changes that were generated?*

During interviews we asked members of the UK and LMIC partner teams to elaborate more on the factors that contributed to the positive changes that they were able to generate as part of their HP. These can be seen in the word cloud in Figure 4.

Figure 4 Interview data on the major factors that contributed to the (positive) changes that HPs were able to generate.

4.1.2.3. What were the major factors influencing the achievement or non-achievement of the objectives?

We can group the factors that influenced the achievement or non-achievement of HP objectives into four major factors; Time Planning/Project Planning, Financial/Budgeting, Operational and Partnership. **Figure 5 sets out those factors which HPs found to most influence their progress**. The one exception was financial and budgeting which was seen to be a negative aspect- a recurring theme in this evaluation (see Section 7 - Lessons Learnt and Recommendations).

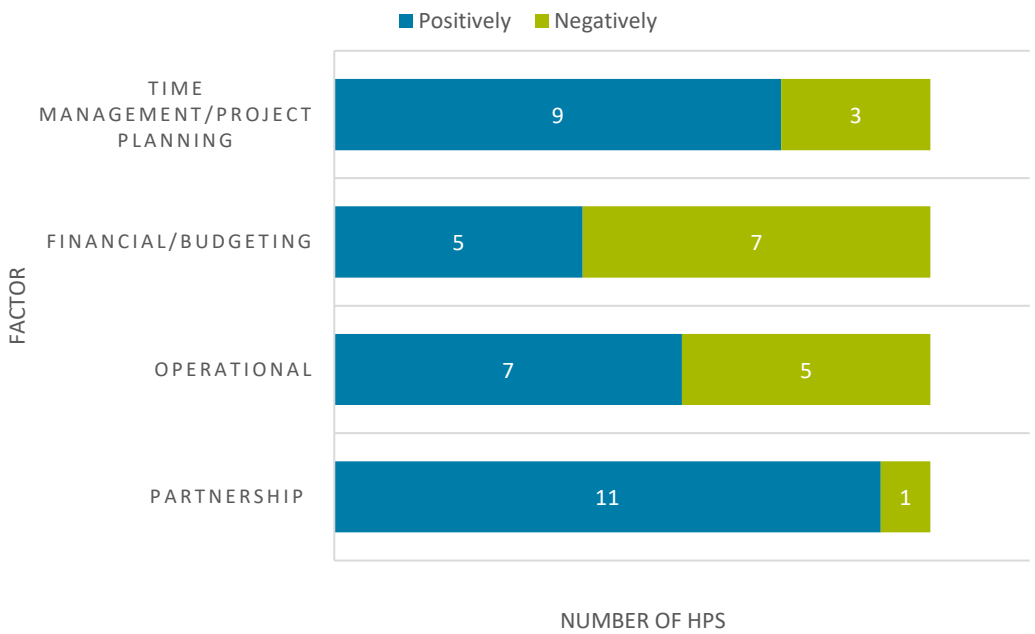

Figure 5 Chart showing the major factors that had a positive/negative influence on the achievement HP objectives,

Partnership factors: Some HPs (particularly those that were newly formed for the purposes of CwPAMS - see Section 7 - Lessons Learnt and Recommendations) experienced issues with communication and division of labour during the initial stages of projects, however these teething challenges had been resolved by Q3. 11 HPs stated that partnership factors such as a good working relationship, having a balance of experience amongst UK and LMIC partners, regular feedback sessions and ensuring that LMIC Leads participated in HP management and leadership, all positively impacted the achievement of their objectives. A number of HPs also remarked that mutual reciprocal visits reduced the feelings of cultural difference amongst HP members. Negative partnership factors largely stemmed from the disbursement of funds through the UK partner; both UK and LMIC partners felt this made the partnership inequitable, LMIC partners felt this gave them less bargaining and decision-making power. It also meant that delays on the side of the UK partner had a large impact on the LMIC partner and the HP's ability to commence their activities on time.

Operational factors: Seven HPs reported that operational factors positively influenced the achievement of their objectives, particularly as a result of having the ability to have audience with, and gain the support of senior medical professionals in and outside of the hospital. This meant that the vast number of activities were backed by management and occurred with little hinderance. Generally, most operational hinderances were overcome through concerted efforts to adapt to the LMIC context. For example, projects that had previous experience with the LMIC context, or a local HP project manager, or sent team members ahead of certain activities to arrange certain logistics, reported operational issues but did not find these to be a significant hinderance. HPs that lacked these elements found it more challenging to adapt to the hospital conventions and processes.

All 12 HPs incorporated some form of community engagement in their Project activities with most utilising social media to generate awareness and advocacy around their work. Under the hashtag #CwPAMS CPA, THET and the HPs posted online about their interventions (both in and outside of the hospitals) and engaged with members of the UK and LMIC community. They also shared health worker profiles and case studies, helpful resources pertaining to AMS and IPC and in some cases raised funds for additional activities using crowdfunding platforms. These activities elevated the Programme's profile and were able to attract online attention from high-level groups such as the UK Royal Family.

Financial/budgeting factors: Many HPs felt that more resources should have been allocated to the CwPAMS Programme as the project work was extensive and demanding with HPs often wanting but unable to do more. HPs also reported that (financial) reporting obligations were overly cumbersome and that they did not feel that the support they received, particularly from in-country members of THET, was sufficient. A number of HPs underestimated flight and local travel costs and rebalancing this error was not always easy. On another note, the volunteer approach raised a number of issues; UK partner members of at least two HPs reported spending their own money during LMIC visits, whilst other LMIC partner members felt they should have been compensated for the work they performed while visiting the UK. The voluntary approach of HP roles also impacted the achievement of objectives as UK team members were more likely to prioritise fulfilling obligations of their fulltime employment before engaging with the responsibilities for the CwPAMS programme.

Time management/project planning factors: Most HPs felt that good project planning contributed to their success. HPs largely agreed that successful activities were the result of thorough project planning usually under the leadership of the LMIC partner, who understood local hospitals and context. It was essential that all HP members possessed strong time management skills as many were carrying out their HP duties as volunteers whilst simultaneously performing their normal jobs. HPs based in rural or particularly understaffed hospitals reported that most group learning sessions consistently commenced late.

4.2. OVERARCHING EVALUATION QUESTION 2

> What is the value to the NHS of its volunteers participating in the CwPAMS Programme, in particular how are skills and experiences absorbed within the UK healthcare institution, and is there evidence of a "skills exchange" between UK volunteers and their counterparts in the LMIC?

SUMMARY OF KEY FINDINGS | AGGREGATE SCORE: 73 (VERY GOOD)

There is strong evidence to demonstrate that the health partnership approach resulted in a skills exchange between UK and LMIC volunteers

- By permitting their volunteers to participate in the CwPAMS Programme, NHS as an organisation gained staff with increased competency around AMR and improved interpersonal, management and training skills.
- In addition, the Programme helped reinforce the importance of AMS and accurate antibiotic prescribing practices and taught Fellows and other UK volunteers how to design interventions for antimicrobial use and stewardship in hospitals and their surrounding communities.
- Notably, both UK and LMIC healthcare workers were trained in data collection and conducting the GPPS
- Most of the individual HP activities that were meant to assess the benefit of CwPAMS Programme to the NHS were scheduled to take place during Q4 and 5 of the Programme and therefore not factored into the evaluation at this time.
- Despite this, by Q3 nine UK health institutions had actively integrated returned volunteer skills and experience into their practice by providing a platform for volunteers to share their insights, endorsing publications associated with CwPAMS and recognising/rewarding the improved competence of returning volunteers.

4.2.1. How many and which health care workers (LMIC/UK) were reached?

According to the quantitative data spreadsheet v3[11], **volunteer data between Q1 and Q3 shows that the CwPAMS Programme was increasing momentum and reaching a large number and cadre of health workers throughout their 12 Projects:**

- Training for volunteers and LMIC health care workers occurred in a variety of ways, across all 12 Projects, including through seminars, workshops, webinars and sharing and learning events. These sessions adopted an interactive, holistic approach to AMS and IPC, and training sessions instructed volunteers on research skills, data gathering, health partnership principles, antimicrobial prescribing practises and consumption surveillance (based on the WHO competency framework)[12]. LMIC Participants were in particular were encouraged to promote awareness of AMR amongst other health care workers, to use national metrics to audit and to adhere to guidelines and NAPs in their work.

[11] Obtained from THET during the course of the evaluation
[12] This can be found at https://apps.who.int/iris/rest/bitstreams/1138914/retrieve

UK and LMIC Volunteers

- A total of 62 volunteers from LMICs and the UK participated in the CwPAMS Programme in Q1, this figure increased to 91 in Q2 and remained unchanged in Q3.
- Disaggregating the data by gender reveals that there was greater female participation amongst UK volunteers in comparison to their LMIC counterparts (Figure 6). There was a significantly greater number of females to male volunteers from the UK throughout the CwPAMS Programme (111 females compared to 47 males) with a 57% increase in the number of female UK volunteers participating in the Programme between Q1 and Q3. LMIC data indicates that while there was a marked increase in the number of female volunteers participating between Q1 and Q3, there were more male volunteers during all three quarters;

LMIC Health care workforce

- According to the quantitative data spreadsheet v3, **A total of 1,500 LMIC health care workforce from a wide range of cadres received training between Q1 and Q3.** This is an average of 125 professionals trained per HP;

- **As a whole the CwPAMS Programme amassed a total of 1,982 training days across all Projects**. 694 days were attributable to nurses followed by pharmacists at 416 days and doctors at 297 days. The balance of days was attributable to medical/clinical officers, community health workers, midwives, technicians, health care assistance and other (undesignated) professionals.

At the training of health practitioners in Uganda, HP B10 employed a One Health approach utilising human and animal health specialists from the UK who actively took part in the training exercises. The One Health Approach advocates a combination of human medicine and veterinary medicine in dealing with the health of mankind, animals, and ecosystems. During interactions after the event, health practitioners from Entebbe hospital remarked that the interactive session had a positive impact on them in terms of understanding the relationship between AMR, infectious diseases and other environmental factors.

- Figure 6 provides a visual overview of relevant volunteer and LMIC workforce training data.

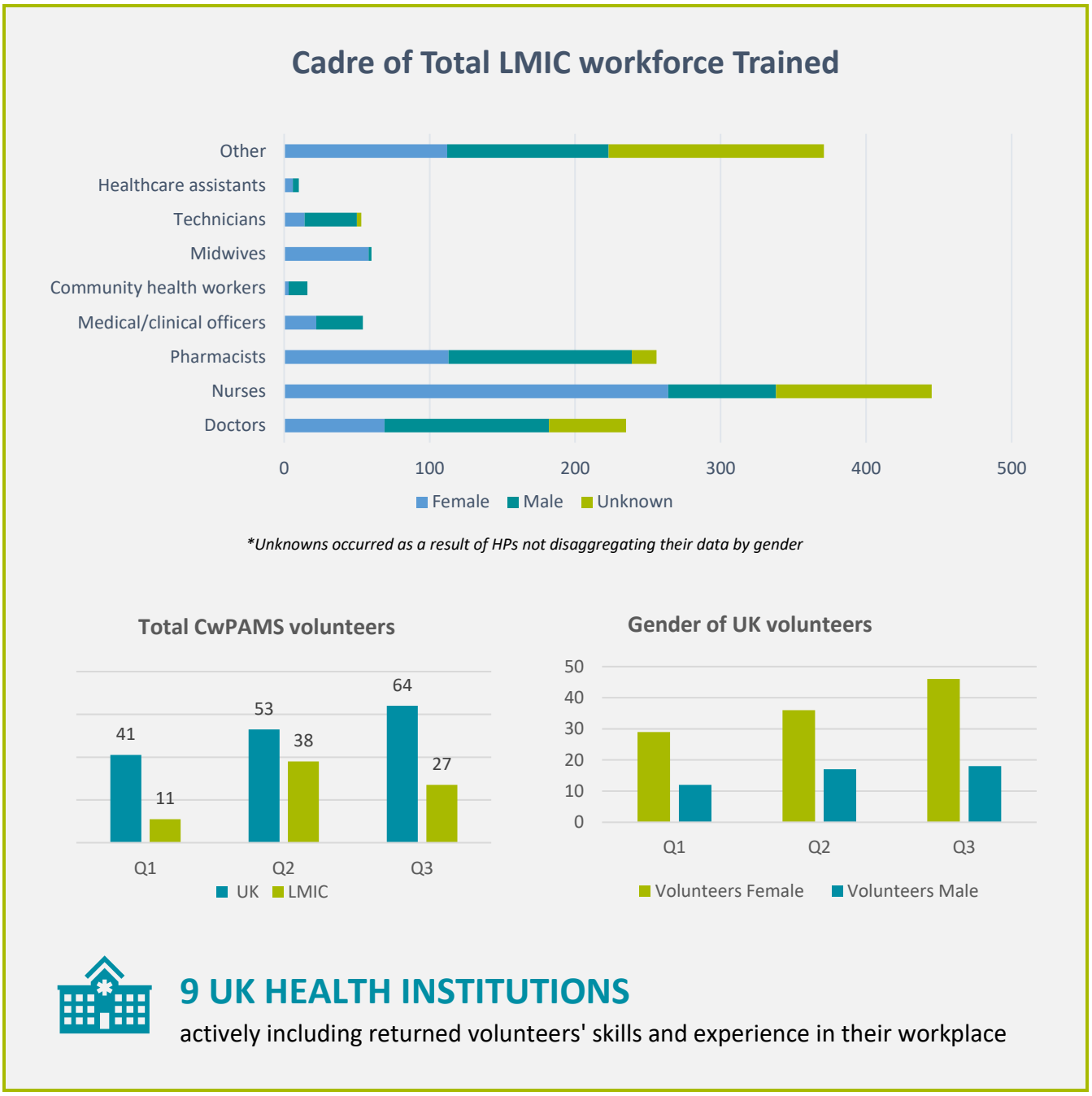

Figure 6 Volunteer and LMIC workforce data Q1-3 according to the CwPAMS Quantitative data spreadsheet

4.2.2. What is the benefit of the CwPAMS Programme to the NHS?

59 **Good**	Data demonstrated that most HPs had provided their volunteers with training and skills that were beneficial to the NHS; however, most of the activities that were meant to assess the benefit of CwPAMS Programme to the NHS were scheduled to take place during Q4 and 5 of the Programme. As a consequence as at Q3, logframe figures demonstrating the impact accrued by the NHS through volunteer participation were fairly low, but overall postive.

Based on the CwPAMS logframe, HPs were required to formulate outcomes and outputs that would quantify the extent to which NHS volunteers had been trained during their participation in the CwPAMS Programme or demonstrated improved leadership skills or an awareness of the global context in their work.

Results demonstrated that most HPs had provided their volunteers with training and skills that were beneficial to the NHS:

- Eight (A02, A07, A11, B02, B03, B09, B10, B12) out of 12 HPs achieved at least 65 percent of their AMS training targets;
- Eight (A02, A07, A11, B01, B03, B08, B09 and B10) out of 12 HPs reported that their NHS volunteers demonstrated leadership skills within their UK institutions;
- Six (A02, A05, A07, A11, B01, B08) out of 12 HPs reported that their NHS volunteers demonstrated awareness of the global context of AMR in their work; and
- Six (A02, A04, A05, A07, B01, B10) out of 12 HPs achieved at least 60 percent of their target in terms of demonstrating that NHS volunteers have improved leadership skills and understanding.

HPs assessed the benefit to the NHS in a variety of ways including giving quizes and tests to volunteers after activities and evaluating volunteers as they shadowed staff or performed tasks around the hospitals; however, project plans and feedback from HP leads indicated that most of these activities were scheduled to take place during Q4 and 5 of the Programme. Therefore as at Q3 cumulative totals from volunteer asssessments from most HPs were partiularly low. Based on findings gathered during interviews,we anticipate that results from the final quarter of the project will demonstrate a larger (positive) impact accrued by the NHS through volunteer participation.

Insights from the Change Exchange also imply that the type of behavioural change which the Programme was looking to observe is notoriously difficult to (quantitatively) measure, especially over such as short period of time and it would be necessary to have these figures be informed by the interview narratives of the volunteers themselves which can be found below.

4.2.3. Is there evidence of a "skills exchange" between UK volunteers and their counterparts in the LMIC?

92 **Excellent**	There is strong evidence to demonstrate that the health partnership approach resulted in a skills exchange between UK and LMIC volunteers

> **"A highlight** *was realising that many aspects of [LMIC] practice are similar to that in the UK and that systems for documentation although mainly paper-based are the same as in the UK. The UK team observed some examples of good practice that can inform areas we struggle with. [for example] a key strength in both Ghana hospitals was limitation of IV antibiotics to 48 hours to prompt review of the patient and early switch to oral therapy"- UK volunteer*

Figure 7 Interview data on the skills that UK and LMIC volunteers gained through their participation in the CwPAMS programme.

Figure 7 illustrates the most frequent skills gained by UK and LMIC volunteers. **There were a broad range of skills and competencies noted with a large amount of overlap between the UK and LMIC partners.** Some of these were anticipated, such as improved competency around AMR, AMS and IPC. As CPhO GH Fellows and other volunteers were at the forefront of some activities, data collection and GPPS skills were also frequently mentioned. A large number of volunteers listed interpersonal skills such as increased confidence, networking and presentation skills especially where members of audience were not native English speakers. Other volunteers cited leadership, management and decision-making as their core takeaways. It was encouraging to note that UK volunteers also considered their ability to adapt to new clinical contexts and low-resourced settings as a strength, one which became especially relevant for those assisting in the front lines during the Covid-19 pandemic. **11 of the 12 HPs (the exception being B12) stated that their UK volunteers found the aforementioned skills relevant to their practice. They gained valuable practical experience and a more global context of AMS by undertaking the GPPS and identifying resistance patterns in broad spectrum antibiotics. For volunteers with management positions in the NHS, CwPAMS increased their leadership and training competency. Many of the pharmacists remarked that the Programme helped reinforce the importance accurate antibiotic prescribing practices and compliance with antimicrobial formulary/protocol restrictions.**

For CPhO GH Fellows and other UK volunteers involved in HP project management, the Programe taught them how to design interventions for AM use and stewardship and pilot these interventions in the hospital setting and surrounding community. The same number of HPs also stated that their LMIC volunteers found these skills relevent.

It is clear that the health partnership approach was a learning experience for all volunteers, even those that were part of HPs that did not have reciprocal LMIC/UK visits. **Data available demonstrates that having the different health professionals interact with each other in a partnership approach successfully led to a skills exchange.**

4.2.4. How have UK institutions actively included these new skills or experiences?

10 of the 12 HPs reported that UK institutions have actively included these new skills or experiences into their practice. This was done through a number of approaches including revising prescribing practices, and supporting and publishing academic and non-academic materials pertaining to the Programme.

> **"I Learnt** *a lot about the leadership in low resource setting. When COVID happened, I found that I could apply what I had learnt here as the pandemic turned the UK into a similar low resource setting. The skills I had learnt in stress management and operating in high pressure environments were extremely helpful"*
> - CPhO GH Fellow

The experiences of one particular Fellow associated to B01 demonstrates the inherent value of the CwPAMS Programme to the NHS. Upon return to her pharmacy department she has delivered a number of presentations for shared learning, her experiences have also been published in the hospital's pharmacy newsletter. Her experience overseeing tasks and her colleagues in the HP has increased her confidence enabling her to better navigate work relationships. As a result of this, she has also taken up a more senior role in her department and her senior IPC supervisors have commented on her increased competency following the Programme.

The integrations of skills and experiences have not been exclusively confined to hospitals or the antimicrobial domain. As a direct result of UK volunteer feedback, Manchester Metropolitan University

(involved in B08) revised its 2019 MSc Health Psychology curriculum to include AMR and public health topics.

It is worth noting that not all volunteers enjoyed the same level of encouragement and support from their NHS institutions. Some volunteers noted that NHS integration and incorporation activities would have taken place after Q3 and that COVID-19 interruptions deprioritised any plans their institutions might have had to support returned volunteers. Other volunteers argued that their institutions deliberately did not give them the opportunity to integrate and demonstrate their improved skills speculating that NHS management did not always recognise the value of the CwPAMS Programme to their institutions. This was in addition to not readily receiving time off to travel or take part in HP activities.

4.3. OVERARCHING EVALUATION QUESTION 3

> What is the potential for scaling up antimicrobial stewardship in national antimicrobial resistance action plans?

SUMMARY OF KEY FINDINGS | AGGREGATE SCORE: 92 (EXCELLENT)

The successes of the HPs up to Q3 of the Programme demonstrate great potential for scaling up Projects to support the implantation of NAPs

- The development of context specific AMS tools, processes and guidelines and the establishment of MTCs in LMIC hospitals appears key to ensuring that AMS and AMR are prioritised and sustained during and after the completion of projects. Scaling up of these elements can lead to effective implementation of NAPs in other health care institutions within the countries;
- Most HPs aimed to address national and local AMR priorities through their interventions, this enabled them to receive buy-in and support from relevant stakeholders who are key in ensuring that interventions are sustained;
- HPs operated within their budgets and were on track to achieving objectives, providing evidence the HP model can be an economically justifiable model for scaling up.

4.3.1. What systems have been put in place that will influence sustainability?

At the Programme level, the health partnership approach was chosen for the CwPAMS Programme at the suggestion of the CPA, following THET's demonstration that the partnership model was an effective, sustainable and value for money approach to strengthening national capacities, that would also incur benefits for the NHS and the targeted health workforces. THET and CPA encouraged sustainability throughout, in addition to the chosen health partnership approach, the HPs implemented Project level objectives and actions with the aim of sustainability such as:

- The establishment of MTCs (including AMS and/or IPC subcommittees) in LMIC hospitals to enable the continuation of the interventions started by the HPs;
- Monitoring behavioural change through collecting data immediately and after three months to promote AMR surveillance and an evidence-based approach to prescribing;
- The empowerment of AMS champions across the HPs to advocate for AMS in hospitals during and after the course of the Project; and
- Training the LMIC workforce in data collection so that GPPS can be conducted after the end of the Projects and also in other hospitals.

11 HPs reported they were currently implementing their sustainability plans and had developed tools, processes and guidelines specific to the LMIC-context to aid the continuation of the knowledge, skills and practises gained by the LMIC workforce during the Project. Nine HPs believed these AMS interventions could be sustained without additional funding; however, there is recognition amongst the HPs that behavioural change is a long process and therefore further work is needed for more substantial long-term impacts and for this, additional funding will be required to motivate and retain volunteers.

Lastly, most partners involved in the Programme believed that their partnerships were equitable whilst 11 (the exception being B08) intend to continue the partnership after the Projects have ended. However, during our interviews with Project leads and other HP member, we noted instances where the perspective of the LMIC partners implied an imbalance of power in their partnerships with UK counterparts. For

example, some LMIC leads appeared to be under the impression that the UK partners were the sources of funding and the ones tasked with delivering impact within the LMIC institutions. The perception did not appear to negatively impact HPs as many UK leads reported that the LMIC teams were very motivated and eager to take ownership of project activities and interventions.

In addition to the systems and tools put in place by the HPs, CPA are currently developing an AMS Toolkit which will provide a roadmap for designing AMS interventions so that the CwPAMS model can be duplicated elsewhere.

4.3.2. To what extent has CwPAMS influenced AMS policy?

81 **Very Good**	High evidence that HPs were able to receive the support of key stakeholders and to influence AMS policy at a local level. There is also evidence of engagement at regional and national levels.

All HP projects aimed to address local priorities and contribute to the implementation of AMR NAPs. During interviews, 9 HPs (A02, A04, A05, A07, A11, B01, B02, B03 and B09) reported having published peer-reviewed articles or other relevant publications as a result of the CwPAMS Programme. Three HPs presented posters of their work at the following national and international events: the UK Clinical Pharmacy Association Pharmacy Infection Network Masterclass (A07), the International Pharmaceutical Federation (FIP) World Congress of Pharmacy and Pharmaceutical Sciences (B02), and internal and external presentations as part of the Health Education England Global NHS Programme (B08). Other HPs were in the were accepted to and/or planning to present their work to various platforms beyond Q3.

At the hospital level HPs were able to ensure that AMS was on the policy agenda. Six HPs successfully established new MTCs and accompanying AMS committees (A05, A11, B01, B03, B09 and B12), whilst four HPs ensured that AMS was prioritised in already existing MTCs by way of either including it as a recurring agenda topic or involving specific personnel with understanding of AMS (A02, A04, B08, B10). Two HPs were working towards establishing AMS committees beyond Q3 (A07 and B02). In addition to the MTCs, the HPs all managed to receive buy-in from hospitals directors and, or high-level management.

All projects have established links with either government, civil society actors or other groups active in the AMS policy domain, mostly at local and district/regional levels through the facilitation of CPA and THET country directors. THET Country Directors maintained relationships with the LMIC MoH representatives with a focus on AMR and attending technical working groups and multi-sectoral coordination committees. HPs were then introduced to relevant officials and registered in relevant groups or committees. From the information gathered, it appears that the HPs have succeeded in engaging key healthcare systems stakeholders who are supportive of their AMS work, and have successfully influenced AMS policy within hospitals. Further monitoring will be required after the projects are completed to measure the full extent of their influence on AMS policy.

As the engagement of national and governmental bodies as well as influencing the AMS agenda on a national level was primarily the responsibility of CPA, the achievements of HPs in this regard is construed as being very positive. We understand that a separate policy evaluation of the Programme has been carried out detailing policy influence in greater detail.

4.3.3. *Was the CwPAMS Programme implemented in an economically justifiable way?*

95 **Excellent**	HP budgets were closely monitored and evaluated through the course of the Programme to ensure spending and costs were justifiable

This evaluation had access to finance reports up to the Q2 for new HPs (A02, A04, A05, A07 and A11) and up to the Q4 for existing HPs (B01, B02, B03, B08, B09, B10 and B12). As a result, the analysis of whether the implementation of the Projects and the Programme as a whole was economically justifiable is also depended on the information provided during interviews or where possible from narrative reports for the new partnerships.

To ensure that HP Project costs were justifiable and anticipating adequate returns, THET conducted budget evaluations and approvals for all the HPs at the inception stage and at quarterly intervals throughout the duration of each Project. Existing HPs were required to submit quarterly financial reports, whilst new HPs reported every six months. In addition to this, THET also provided support to the financial management of the Projects particularly where budgeting, costing and booking flights and accommodation were concerned. However, as previously noted, some HPs reported that they could have benefited from contextual budgeting and costing support from in-country THET staff at the beginning of their Projects.

The prescribed volunteer-based approach allowed HPs to utilise relevant experts at minimum to no costs to the projects. That being said the evaluation recognises the costs incurred by the individuals involved and the NHS. The HPs also appeared to have regard for value for money throughout the duration of the Programme. This is evidenced by intentional efforts across the HPs to minimise travel costs (sometimes through sharing costs with other in-country projects implemented by UK partners outside of the CwPAMS Programme), and to ensure that Projects were achieving maximum efficiency and effectiveness through shared learning and the training of LMIC healthcare workers. Overall, none of the HPs exceeded their budgets and 10 HPs reported that they were able to achieve allocational efficiency, through optimal distribution of the funding to their activities. That said, one HP noted that they had not allocated sufficient budget to travel which resulted in volunteers having to pay for expenses out of pocket, a practise which is not condoned by THET police. Considering that the majority of the HPs were operating within their budgets and on track to achieving their outputs and outcomes as well as significant unintended effects, it appears that the HP model can be an economically justifiable model for scaling up.

5. CONCLUSION

The CwPAMS Programme provided sufficient evidence to demonstrate the value of applying the health partnership approach to AMS in LMICs. It has made a convincing case for the implementation of AMR NAPs through multidisciplinary interventions that are localised at the hospital-level, and the necessity of employing AMR surveillance data to increase the rational use of antibiotics in health institutions and surrounding communities. Findings from the previous section demonstrated that the CwPAMS Programme largely achieved its Programme-level outcomes attaining an overall average rating of VERY GOOD (Score: 80). This section summarises these findings and the overall CwPAMS Programme according to OECD-DAC Evaluation Criteria.

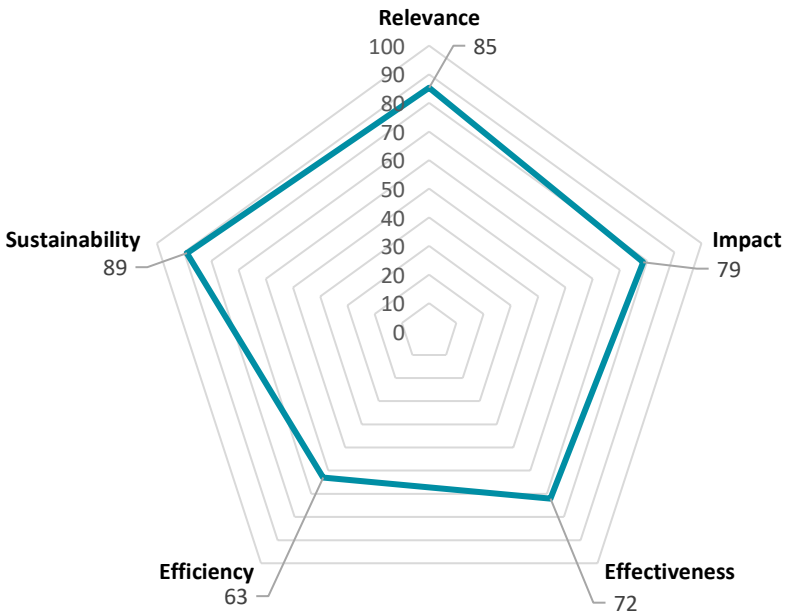

Figure 8. Overall average rating of the CwPAMS Programme according to OECD-DAC criteria

5.1. RELEVANCE: 85 (VERY GOOD)

HPs within the Programme averaged a "Very Good" score of relevance in this evaluation. The Programme design and purpose were able to effectively balance the needs of beneficiaries and LMIC national priorities against the objectives of the Fleming Fund and affiliated stakeholders. Central to this approach was the initial scoping exercise undertaken by CPA with support from THET and DHSC. This exercise provided key information on relevant AMR strategies employed by each of the four LMICs. **By having this information readily available from the outset, all HPs were able to propose suitably targeted activities, outputs and outcomes that placed the LMIC context and workforce at the forefront of all interventions.** It appears however that CPA and THET did not adequately consider GESI within the CwPAMS Programme which in turn led to a lack of its prioritisation within the HPs.

CPA and THET provided integral support to the HPs. CPA provided technical support to HPS through the provision of training tool kits, training on the collection of surveillance data for the GPPS, supporting the development of evidence-based standards, guidelines, protocols and the development of a mentorship

programme to support sustainability. THET oversaw project management, finances, monitoring and evaluation and were the first line of contact for the HPs. Whilst HPs enjoyed a high level of support throughout the Programme from CPA and THET, a few reported that they could have benefited from more country specific support (from THET and CPA) at the beginning of the project, particularly in regards to finances and healthcare systems processes. This was especially the case with new partnerships or those unfamiliar with LMIC environments.

5.2. IMPACT: 79 (VERY GOOD)

HPs within the Programme averaged a "Very Good" score of impact within in this evaluation. Individual HPs must be commended for their ability to achieve significant, positive intended and unintended higher-level effects. The key driver of success in this regard was the emphasis HPs placed on:

- Meaningful (policy) engagement with relevant actors in the antimicrobial and pharmaceutical domains of LMICs
- Generating behavioural change in pharmacists
- Empowering and training a broad range of LMIC healthcare workers
- Creating activities and interventions that facilitated learning and a skills exchange between UK and LMIC partners

These factors created a holistic AMS programme that encouraged collaboration between health, education, government and civil society actors at various levels. Importantly, focusing on pharmacists alone would not have generated the significant change that CwPAMS was aiming for and thus the Programme took a multidisciplinary approach-targeting a wide range of LMIC cadres and associated decision makers. Whilst the training exercises were made relevant to the LMIC context, UK volunteers still derived benefit from the shared learning experience. Following their return to the UK, institutions that employed these volunteers benefited from their staff's increased awareness of the global AMR context as well as their newly developed professional skills gained from participation in the Programme. Additionally, the CPhO GH Fellowship gave the appointed UK Pharmacists an opportunity to enhance their leadership and project management skills and to provide meaningful contributions to their HPs.

Besides meeting their targets, the number of, and frequency with which, HPs were invited to high-level and community AMR engagements and their quick response the COVID-19 health pandemic, both in LMICs and the UK, is a testament to the positive intended and unintended impact of the CwPAMS Programme.

5.3. EFFECTIVENESS: 72 (VERY GOOD)

HPs within the Programme averaged a "Very Good" score of effectiveness in this evaluation. All HP projects aimed to address the Fleming Fund objectives and recorded substantial achievements of the Programme outputs and outcomes up to Q3. Good working relationships and project management were two significant factors that positively influenced the effectiveness of the Projects. **The health partnership model proved to be a key factor in enabling HPs to achieve their objectives.** This was evidenced by great communication and collaboration between partners and respectful relationships between volunteers at a personal level. Reciprocal visits reduced the feelings of cultural differences amongst HP members and allowed for greater shared learning and knowledge exchange amongst the Project teams. In turn, HPs were able to harness these good relationships to work together towards designing realistic and context specific objectives which were less prescriptive and more collaborative. The HPs generated significant, intended and unintended higher levels effects by employing agile project management and adapting AMS

approaches to meet the local context where possible. Information provided by the HPs during the interviews along with the achievement of over 50% objective and outcome targets by Q3, indicate that the Programme, as a whole, was on track to achieving its outcome targets by its original anticipated end date (April 2020).

On the other hand, financial and budgeting factors presented challenges for many HPs. Whilst HPs were able to implement their Projects within their respective budgets, the Project work was extensive and demanding and additional resources and funding would have made the work more manageable for the HPs. Additionally, HPs underestimated the level of overheads required to meet the administrative and reporting obligations of the Projects as well as flight and local travel costs requiring the HPs to rebalance their budgets where possible to ensure the best using funding.

5.4. EFFICIENCY: 63 (GOOD)

The HPs within the Programme averaged a "Good" score of efficiency in this evaluation. HPs aimed to perform an ambitious number of activities and interventions and most of them achieved success by efficiently maximising their financial and other resources. The majority of HPs remained within their allocated budget and achieved optimal budgetary distribution with the assistance of THET who conducted a budget approval at the inception of the project and evaluations at quarterly intervals thereafter.

It was a significant challenge for HPs to complete activities at the times specified in their work plans, most HPs extended, rescheduled and cancelled at least one of their activities between Q1 and 3. These changes were largely the result of delays in re-establishing defunct hospital structures and approving Project budgets and contracts. **Widespread delays across the HPs demonstrate that Programme timelines did not adequately consider the time required to get collaboration and financial agreements in place and how this would affect Project implementation. Despite this, through effective risk management, adaptability and the support of THET and CPA by Q3 most HPs had overcome these setbacks** and logframe data indicated that HP objectives were on track to be achieved within the duration of the overall Programme.

There was overall consensus among HPs that reporting mechanisms were overly cumbersome requiring a significant amount of time and resources, particularly where one or both partners lacked extensive prior monitoring (and evaluation) experience. For instance, one HP remarked that financial reports were so cumbersome that they decided not to request additional funds for unanticipated expenses based on the time/effort that the exercise would require. It is worth noting that in response to HPs feedback, reporting requirements for Q1 to 3 were scaled back and a decision was made to forgo Q4 reports altogether. While this significantly reduced the pressure on HPs, they reported that THET and CPA should have been more conscious of the volunteer-based nature of this Programme from the outset and made reports more user-friendly and unique to each HP as the resources that they devoted towards reporting could have been put to better use elsewhere.

5.5. SUSTAINABILITY: 89 (VERY GOOD)

HPs within the Programme averaged "Very Good" scores for sustainability in this evaluation. CwPAMS was a short-term Programme and thus it is challenging to conclusively evaluate the sustainability of its interventions; however, objectives and outcomes were designed to lead to improvements to the LMIC health systems that would be sustainable and encourage long-term impacts. **All HPs were selected following the competitive selection process successfully responded to the CwPAMS call and set objectives**

and outcomes that could be sustained within the LMIC health systems. It is apparent that the development of guidelines, protocols and processes; and the formation of MTCS and accompanying AMS and IPC committees (as well as the appointment of AMS champions) in LMIC institutions will be the drivers of change in AMS and will help sustain the newly developed practises after the CwPAMS funded Projects are completed. In addition to the systems and tools put in place by the HPs, CPA are currently developing an AMS Toolkit which will provide a roadmap for designing AMS interventions so that the CwPAMS model can be duplicated elsewhere. Sustaining the HPs after the end of the projects will also be important to continue the momentum of the work started. The HPs recognise this and eleven of them intend to continue their partnerships and to pursue alternative opportunities to address more AMR challenges present in the LMIC health care systems. Overall, the processes and structures that have been established can be sustained without additional funding and will likely play a key role in sustaining the changes achieved by the HPs. However, continued and effective operations of such initiatives will likely require some form of remuneration to motivate and retain volunteers

6. LESSONS LEARNT

6.1. Partnership approach

It is our opinion that without a doubt, the partnership approach does lend to the overall success of the CwPAMS Programme and the sustainability of the Projects (and their impact) once the Programmes comes to an end. The approach does help reinforce equitability amongst involved partners, and whilst there is room for improvement, the general consensus amongst the UK and LMIC partners involved was that the approach did create a unique professional and personal bond between the volunteers involved with respect to seeing Projects through.

6.2. Collaboration amongst partners and healthcare workers

Strong collaborations, not only at a high level, but also in hospitals were to some extent a key factor enabling HPs to mitigate challenges resulting from limited funding and resources. By engaging influential AMR personnel and having their activities endorsed from the outset, many HPs were able to function more efficiently and generate new opportunities within their respective settings.

6.3. Agile project management central to success

Agile project management and risk mitigation played a central role in individual Project success. The majority of HPs were newly formed (or consisted of newly created Project teams within an existing partnership) and project proposals were compiled over the internet, sometimes in a hurry and with poor connection; thus, unforeseen issues were always likely to arise. The most successful HPs overcame operational challenges by using agile project management methods and, in some circumstances, managed to make use of adverse situations to demonstrate their competence and relevance, as demonstrated by the six HPs (A07, B01, B02, B03, B08 and B12) that reported significant contributions to local COVID-19 response efforts.

6.4. Support from THET and CPA

Support from THET and CPA played a critical role toward the achievements of the HPs, although more contextually relevant support could have been provided to the HPs in-country. Additionally, more could have been done to set expectations with the HPs and clearly communicate the roles of THET and CPA and the support that they could provide.

6.5. *Monitoring and Evaluation*

From the perspective of the HPs, a one-size-fits all approach to reporting was ill-suited to a Programme with 12 delivery partners pursuing diverse (though adapted) objectives. An initial concern from a number of HPs, that was partially addressed, was that reports failed to adequately capture the particular nuances of each HP's work in the context they were operating in. In addition, whilst the importance of monitoring, reporting and evaluation is appreciated, the time and labour resources required to adequately perform these tasks should be further considered and appropriately reflected in the CwPAMS design.

6.6. *Volunteer-based approach*

The 'volunteer-based approach' championed by THET in some cases undermined the ability of HPs to achieve their objectives. The voluntary nature of the majority of roles meant that CwPAMS critically relied on both LMIC and UK partners dividing their time between their Project and personal and professional obligations. This led to delays in undertaking Project activities, demotivation among the volunteers and became a source of tension for some HPs. Whilst it is not THET policy, there were certain instances where LMIC volunteers not only had to forgo a day of pay to attend training events but also cover their own travel expenses. This kind of practice is not always appropriate in LMIC contexts (where the 'no work-no pay' policy is prevalent). In this way the Programme's emphasis on 'value for money' is to the detriment of particularly the LMIC partners and workforce, albeit unwittingly. Considering the amount of work demanded by this Programme it is hard to imagine members of the HP committing to more longer-term volunteer-based CwPAMS projects or remaining involved proactively in current initiatives.

6.7. *Gender equality and social inclusion*

There was a superficial prioritisation of GESI in the CwPAMS Programme from the grant call stage and throughout its duration. By way of example, the grant application template which HPs were to complete, only dedicated a minute section to GESI. As a result, most HPs did not provide sufficiently adequate GESI plans. Further analysis of Project reports and responses from interview participants highlighted that many felt that simply having women as a majority within teams and training sessions was enough evidence to demonstrate the empowerment and upskilling of women. However, this failed to recognise that in LMICs because of gender role stereotypes, nursing and other healthcare roles are often perceived as a women's profession, therefore GESI interventions should encourage greater interrogation of this and other social/cultural notions. In LMIC contexts simply having a partnership or training seminars where the majority of participants are women does not necessarily translate into gender empowerment (especially when the women are not being remunerated) as is the generally accepted view in the UK and more developed countries. Lastly it should be highlighted that there was a minority opinion (on both the UK and LMIC side) that the Programme inadvertently worked to reinforce already existing patriarchal notions that undervalue the contribution of women and other marginalised groups.

6.8. *Contributions to the NHS*

Information obtained from reports and interviews indicates that the Programme does broadly contribute to the NHS by way of empowering participating UK volunteers. That said, there is evidence that not all institutions always saw or treated the returning volunteers they employed as a priority and/or value-add. In some cases, volunteers appeared to even have difficulty asking for time-off to complete Project obligations. Although this is certainly not a reflection on the majority of the UK partners perception of their volunteers, it does highlight that perhaps not all of the UK partners (i.e. institutions employing the volunteers) fully appreciated the value of CwPAMS.

7. RECOMMENDATIONS

7.1. *THET and CPA support*

It is advisable for THET and particularly CPA to consider more direct and clear communication with HPs explaining their roles and ways in which they may provide support, whether in the foreground or background. Furthermore, both organisations should consider more proactive diligence of HPs, particularly during start-up phase, in order to identify likely challenges Projects may have (for example ethical approval delays) and also identify how each of THET and CPA could provide support which would be more bespoke to the HP for the duration of the Project. This hands-on approach is likely to help increase efficiency across the Projects, help set and manage expectations, and also equalise the sense of obligation and ownership between all partners involved within the partnership.

7.2. *Management Information System*

Based on feedback received from HPs and other experience we have directly supporting global development projects, we highly recommend Programme and Project monitoring and reporting procedures which are electronic, transparent and automated. This includes the creation of "smart" templates which are unique to Projects and objectives but which can feed data into a more universal template which THET, CPA and more broadly funders can use to gauge Programme progress and achievements. Implementation of an accessible online management information system (or something similar to it) will provide a flexible and adaptable platform to support and build capacity for project management, monitoring, evaluation, learning (MEL) and reporting across all of CwPAMS' Projects and ultimately reduce the burden on volunteers in terms or reporting whilst increasing the Programme's exposure (see https://mis.tomorrowscities.org/ for example). Furthermore, it is not reasonable to expect expert-level project management and reporting skills from volunteer led-Projects which have limits to the amount that can be spent towards overheads. THET and CPA should consider providing an earmarked amount of funding to each HP dedicated solely to cover costs associated with project management/administration support.

7.3. *NHS endorsement and support*

CwPAMS must make use of its links to the DHSC to ensure that the Programme has high level endorsement at each of the participating NHS hospitals and health institutions. This will ensure that relevant skills and knowledge from returning UK volunteers are integrated into institutions and that are volunteers are given time off and that their work schedules factor in the HP project demands. Furthermore, there should be proactive sensitisation of volunteers' employers by THET and CPA, highlighting the value of the CwPAMS programme to the employer, and encouraging supervisors/line-managers of volunteers to embrace and promote the learnings of returning UK volunteers as valuable organisational know-how.

7.4. *Partnership agreements*

HPs should be encouraged to formalise their partnerships through collaboration agreements that stipulate, among other things, partner roles and obligations and budget allocation. This would go a long way to preventing many partnership-related challenges and would manage expectations. With the current process, it is hard to see the partnership as truly equitable when the all the funding is dispersed through the UK partner. THET should consider the use of tripartite or consortium-style sub-grantee/funding agreements with both partners which would allow for funding to be directly transferred to the LMIC partner in order to further reinforce the equitable nature of the partnership.

7.5. *Funding and remuneration*

For this Programme to ensure its interventions are sustainable in the long-term funding needs to be made available to cater for at least partial remuneration of volunteers. The Programme should consider apportioning at least some of the funds towards LMIC salaries (as the money enjoys a higher purchasing parity there). One key recommendation in regards to this would be to ensure that each HP has a motivated

project manager/administer to oversee and run interventions (as stated under 8.2). At the moment HPs are partially expecting this role to be played by in-country THET and CPA personnel who have their own portfolio of projects to attend to. Lastly, THET should ensure that policies relating to renumeration and travel and subsistence are clearly communicated to the HPs leads and the participating volunteers.

7.6. Gender Equality and Social Inclusion

GESI policy must be revised to spell out in more detail the kinds of interventions that are likely to translate into meaningful change and prevent the use of 'silver bullet'[13] and transplanted approaches. More attention must be paid to GESI during the initial scoping and project planning phases as it is not given equal weighting in all NAPs and thus HPs must take more initiative. A more conscious emphasis must be placed on ensuring that these interventions translate into meaningful benefits and access to opportunities for women in the form of promotions and greater decision-making power. As all 12 LMIC HP Leads were male, the CwPAMS Programme might consider adopting gender affirmative action policies to ensure that there is equal representation of both genders or preferential treatment to women, disabled persons and other marginalised groups at the forefront of HP leadership. have specialised HR and other personnel who have been specifically trained on issues concerning gender and social inclusion.

Much like how specialists from Change-Exchange were utilised as part of the Programme, it may be beneficial to employ the services of LMIC Gender and Inclusion specialists to help underscore the importance of GESI to HPs (preferably at the onset of Projects). This approach would promote local ownership and provide practical interventions which could be used by the Projects and the Programme to truly achieve gender equality and social inclusion. If this is not possible CwPAMS could seek guidance from the institutions involved in the Programme who have specialised HR and other personnel who have been specifically trained on issues concerning gender and social inclusion.

7.7. Data Collection and Publication Code of Conduct

HPs expressed concern at the lack of certainty on data collection and data use pertaining to CwPAMS. LMIC and UK members were particularly concerned about the failure to acknowledge local contribution and input during (academic) publication (albeit sometimes unintentionally). To prevent any ambiguity on the issue, CwPAMS should consider devising a code of conduct and aim to gather prior informed consent from all LMIC partners and participating hospitals on the use and publication of data collected during the course of the Programme.

[13] In International development theory 'silver bullets' refer to a single solution/mechanism that is put forward as applicable and effective to all underdeveloped countries and contexts.

8. ANNEXURES

ANNEX A: TERMS OF REFERENCE

Evaluation of the Commonwealth Partnerships for Antimicrobial Stewardship

Terms of Reference

BACKGROUND

The Commonwealth Partnerships for Antimicrobial Stewardship (CwPAMS) programme is a project within the Fleming Fund, a £265 million programme funded by The Department of Health and Social Care of the UK Government. The Fleming Fund's aim is to support countries in collecting high quality data relevant to antimicrobial resistance (AMR) that will then be shared nationally and globally. By supporting the collection of AMR surveillance data, and other relevant data, the theory of change expects we will collectively be better able to understand the scale and scope of the problem related to AMR in order to more effectively tackle them. Its ultimate aim is to see an increase in the rational use of antibiotics, and ultimately a reduction in morbidity and mortality associated with AMR. The Fleming Fund will achieve these objectives through funding a number of projects with a diverse range of delivery partners, each focusing on a specific set of objectives and outputs.

THE COMMONWEALTH PARTNERSHIPS FOR ANTIMICROBIAL STEWARDSHIP PROGRAMME

Fleming Fund objectives:

1. Supporting the development of National Action Plans for AMR.
2. Developing and supporting the implementation of protocols and guidance for AMR surveillance and antimicrobial use.
3. Building laboratory capacity for diagnosis.
4. Collecting drug resistance data.
5. Enabling the sharing of drug resistance data locally, regionally, and internationally.
6. Collating and analysing data on the sale and use of antimicrobial medicines.
7. Advocating for the application of data to promote the rational use of antimicrobials.
8. Shaping a sustainable system for AMR surveillance and data sharing.
9. Supporting fellowships to provide strong national leadership in addressing AMR.

CwPAMS contributes to achieving objectives 2, 6 and 7 of the Fleming Fund:

- Developing and supporting the implementation of protocols and guidance for AMR surveillance and antimicrobial use.
- Collating and analysing data on the sale and use of antimicrobial medicines.
- Advocating for the application of data to promote the rational use of antimicrobials.

This will be achieved by leveraging the expertise of UK health institutions and technical experts in AMR through working with national healthcare institutions in four Commonwealth countries: Ghana; Tanzania, Uganda and Zambia, to address AMR challenges identified in AMR National Action Plans which have already been drawn up/ are being drawn up with the support of the Fleming Fund. CwPAMS is also expected to galvanise action amongst and between Commonwealth actors on AMR, building on existing Commonwealth partnerships and networks.

Twelve health partnership projects (partnerships between UK health institutions and their peers in LMICs) have been funded to achieve these objectives, where NHS health workers volunteer their time to co-develop strategies and share skills and knowledge to address issues related to: antimicrobial stewardship (AMS), including surveillance; antimicrobial pharmacy expertise and capacity; and, if

contextually appropriate, infection prevention control (IPC). Key stakeholders include the Department of Health and Social Care, the respective Ministries of Health in Ghana, Tanzania, Uganda and Zambia, other Fleming Fund implementing partners and the successful health partnerships and the organisations that constitute them. Projects have been running from February 2019 and are expected to end in April 2020.

CwPAMS is a collaborative initiative between THET and the Commonwealth Pharmacists Association (CPA).

The logical framework structure:

OUTCOME 1
LMIC healthcare Institutions and LMIC health workforce demonstrate improved practice related to AMS and prescribing practice.

OUTCOME 2
AMS strategies, guidelines and tools in place in each LMIC healthcare institution.

OUTCOME 3
NHS staff demonstrate improved leadership skills and understanding of the global context of AMR in their work (COMPULSORY).

OUTPUT 1
Strengthened capacity of the LMIC healthcare workforce in areas of AMS and antimicrobial prescribing practice.

OUTPUT 2
LMIC healthcare institutes develop/implement AMS policies and protocols in line with international or national guidelines/frameworks.

OUTPUT 3
NHS volunteers demonstrate improved knowledge and understanding of AMS in LMIC contexts (COMPULSORY).

AUDIENCE OF THE EVALUATION

- Department of Health and Social Care
- Health partners LMIC/UK
- NHS England and Improvement
- WHO
- Africa CDC
- Ministries of Health in Ghana, Tanzania, Uganda and Zambia
- The Commonwealth Health Ministers and Secretariat
- Fleming Fund implementing partners in the four countries
- Wider dissemination through appropriate peer review publications

OBJECTIVES OF THE EVALUATION

The objectives of the evaluation are to:

- Provide an objective assessment of the achievement and results, weaknesses and strengths of the programme, as well as an analysis of its performance in terms of progress and process, relevance, sustainability, and the extent to which the project is contributing to enabling the desired impact.

- Determine the extent to which the 12 CwPAMS health partnership projects contributed to achieving stated objectives of the Fleming Fund.
- Generate lessons learned and good practices from the project's work under each of the three Fleming Fund objectives.
- Provide clear and forward-looking recommendations that can guide the DHSC in developing strategies for similar projects.

EVALUATION APPROACH AND METHODS

The evaluation will take a summative approach, reviewing and discussing how and to what extent CwPAMS realized its expected results with a focus on the "higher" levels of the logical framework. However, there will also be a formative element in that the evaluation will document important lessons learned for DHSC, THET/CPA and external audiences among health partnerships.

The evaluation will apply the OECD DAC evaluation criteria of relevance, effectiveness, efficiency, impact and sustainability. The discussion of the criteria may be integrated in the discussion of evaluation questions, but the relevant criteria should be indicated or a short summary per criterion should be included in the report.

The evaluation will be carried out as a **desk study** of all relevant documentation including partner reports and data collected by the CPA, complemented by **interviews** with relevant LMIC and UK institution staff and UK volunteers. The consultant will explore the feasibility of participating in a learning event in Ghana on the 21st of April, the cost of which will be included in the overall budget.

SCOPE OF WORK AND EVALUATION QUESTIONS

The evaluation will seek to answer the following specific questions focused on programme outcomes:

- To what extent have LMIC healthcare Institutions and the LMIC health workforce demonstrated improved practice related to AMS and prescribing practice?
- Are AMS strategies, guidelines and tools in place and being used in each LMIC healthcare institution? How useful are they?
- Have NHS staff demonstrated improved leadership skills and understanding of the global context of AMR in their work?

It will be guided by three overarching evaluation questions:

1. ''Proof-of-concept''
    a. To what extent has the CwPAMS programme improved antimicrobial stewardship in LMIC partner healthcare institutions?
    b. Does the **health partnership approach** improve antimicrobial stewardship in LMIC partner healthcare institutions and staff?
2. What is the value to the NHS of its volunteers participating in the CwPAMS project, in particular how are skills and experiences absorbed within the UK healthcare institution, and is there evidence of a "skills *exchange*" between UK volunteers and their counterparts in the LMIC?
3. What is the potential for scaling up AMS in National AMR Action Plans?

The evaluation will also consider the following OECD-DAC Criteria:

- **Relevance**
    - How relevant was the support of CPA? THET? in terms of enabling LMIC/UK institutions to achieve the project goals?
- **Effectiveness**

- To what extent were the objectives achieved?
- What were the major factors influencing the achievement or non-achievement of the objectives?
- Were the initial objectives realistic?

- **Efficiency**
  - Was progress achieved at reasonable costs?
  - Was the actual timeline of development and implementation realistic? Were the objectives achieved on time?
  - Was the project implemented in an economically justifiable way under the given circumstances?
- **Impact**
  - What is the programme impact on the pharmacy workforce (upskilling, roles created, inclusion in/leading of AMS teams, policy groups etc.)?
  - How many and which health care workers (LMIC/UK) were reached?
  - Which factors contributed to the changes that were generated?
  - To what extent has CwPAMS generated or is expected to generate significant positive or negative, intended or unintended, higher-level effects?
  - What is the benefit of CwPAMS to the NHS?
- **Sustainability**
  - To what extent has CwPAMS influenced AMS policy?
  - What systems have been put in place as a result that will influence sustainability?

TASKS AND RESPONSIBILITIES

Consultant's responsibilities

1. Preparatory work:
   a. Establish a good understanding of CwPAMS through discussions with THET Grants and the CPA management teams and review of key background documents, reports, data and publications.
   b. Identify information gaps and propose strategies for gathering critical additional information.

2. Evaluation design and implementation
   a. Refine evaluation questions, design evaluation methodology, tools, plan for analysis.
   b. Develop a list of informants and a detailed workplan in dialogue with THET/CPA team.
   c. Write up inception report.
   a. Conduct evaluation
   b. Document, synthesise and analyse findings drawn from the document/data analysis, consultations, interviews.
   c. Draft complete report of findings, analysis and recommendations.
   d. Finalise report integrating comments from DHSC, THET/CPA.

THET/CPA responsibility (including country directors)

1. Share with the consultant information and data (Global Prevalent Point Survey, Anti-Microbial Stewardship, and VS analysis) which form part of what is to be analysed, essential background documents and other relevant reading. Provide and explain lists of documents, stakeholders and other information as needed.
2. Orient the consultant and be available for regular meetings to discuss details.
3. Review, comment and approve the inception report.
4. Support the consultant to implement agreed activities.

5. Comment on initial findings and the full draft report.
6. Draft a management response after the completion of the evaluation.

DELIVERABLES

The consultant will produce the following deliverables. All written materials must be in English submitted electronically in accessible formats.

1. Inception report with refined evaluation framework, detailed methodology including for analysis, work plan and draft report outline.
2. Draft of the full evaluation responding to the objective and scope of work in this TOR, maximum 25 pages long not including annexes
3. Final evaluation report incorporating THET/CPA comments and suggestions with a stand-alone 'communicable' executive summary that is no more than three pages long for sharing with donors and stakeholders.

PROPOSED TIMEFRAME AND BUDGET

The consultant is expected to carry out the evaluation and produce the deliverables between March and June 2020. All work must be completed, and final reports accepted no later than 19th June 2020. The evaluation will last no more than 25 working days. The Consultant will be expected to participate in one or two country learning events using them as opportunities for learning and data collection. Country visit dates and feasibility of visit will be discussed and agreed during the inception phase.

Suggested deadline for deliverables

Deliverable	Timeframe
Inception report	By 15th April 2020
Full draft evaluation report	By 30th May 2020
Final evaluation report	By 19th June

ANNEX B: EVALUATION FRAMEWORK (QUESTIONS)

1. PROOF OF CONCEPT

1.1. To what extent has the CwPAMS programme improved antimicrobial stewardship in LMIC partner healthcare institutions?

OECD-DAC Criteria: Relevance, Effectiveness, Efficiency, Impact, Sustainability

1.1.1. How relevant was the support of CPA? THET? In terms of enabling LMIC/UK institutions to achieve the HP goals?

Did the Partnership receive the expected support from CPA?

- Did the HP have an appointed fellow?
    - Did the fellow facilitate adequate communication between CPA and the HPs?
- Did the HP receive bespoke training and/or materials from CPA during the course of HP?
- Did the HP find the CPA support on reporting, monitoring and evaluation to be useful?
- Did CPA establish relationships between the HPs and relevant networks both at the inception stage and during the course of the HP?

Did the Partnership receive the expected support from THET?

- Did the HP receive adequate support on reporting, monitoring and evaluation?
    - Did you find reporting mechanisms overly cumbersome?
- Did THET serve as an effective first line of communication for HPs answering queries in a timely manner?
- Did the HP receive their funding at the specified time?
        - If not please provide additional information on what caused this?
- Is the partnership new (i.e. commenced through CwPAMS) or is it a pre-existing partnership?

1.1.2. To what extent was the CwPMAS programme designed to meet the needs of its beneficiaries?

Was an initial scoping exercise undertaken to identify beneficiary needs?

How effectively has Gender Equality and Social Inclusion ('GESI') been integrated into HPs?

- To what extent has your HP enhanced women's opportunities, skills, knowledge and confidence?

1.1.3. Was the actual timeline of development and implementation realistic? Were the objectives achieved on time?

Were activities/outputs/outcomes completed in the specified time?

Did HPs report an increase in the cumulative outputs and outcomes at each quarter (unless the initial plan required otherwise)?

Did the HP commence on time (receive funding, ethics approval etc on time)?

Did the HP report unplanned delays? Or report any significant changes in HP time spans? (These should not be resultant from Covid-19-related effects)

1.1.4. Were the initial objectives realistic?

Did the HP meet at least 50 percent of its targets?

Were activities, outcomes, or outputs significantly revised between the initial proposal submission and Q1?

Were activities, outcomes, or outputs significantly revised during the course of the HP?

Did the LMIC partner think that the objectives and targets of the HP were manageable?

Did the UK partner think that the objectives and targets of the HP were manageable?

1.1.5. To what extent has CwPAMS influenced AMS policy?

Did the HP aim to address (local) priorities and contribute to the implementation of the national action plans?

Did the HP publish any peer-reviewed articles, official policy papers or other relevant publications?

Has the HP established formal partnerships/links with any government/ civil society actors or other groups active in the AMS policy domain (local, regional or national level)?

Have any government papers officially recognised the partnership, HP, CwPAMS?

1.1.6. To what extent were the objectives achieved?

Did the HP aim correlate with at least two of three objectives of the Fleming Fund?

Did the HP develop and support the implementation of protocols/guidelines for AMR surveillance and AM use?

If the HP did develop protocols/guidelines for AMR surveillance and AM use, are these in line with international/national guidelines?

Did HPs meet 75% of their output and outcome targets?

1.1.7. What is the programme impact on the pharmacy workforce (upskilling, roles created, inclusion in/leading of AMS teams, policy groups etc.)?

Did the programme create new roles for their pharmacy workforce?

Did the HP achieve at least 75 percent of the target number of days training for the pharmacy workforce?

Did the HP foster links between its pharmacy workforce and policy groups, IPC or AMS teams?

Did the HP foster links with national pharmacy associations?

1.2. Does the health partnership approach improve antimicrobial stewardship in LMIC partner healthcare institutions and staff?

OECD-DAC Criteria: Effectiveness, Impact

1.2.1. Which factors contributed to the changes that were generated?

1.2.2. To what extent has CwPAMS generated or is expected to generate significant positive or negative, intended or unintended, higher-level effects?

According to the LMIC partner, did the HP generate significant impact on the workforce and associated decision makers?

- Was impact deemed positive, negative?

1.2.3. What were the major factors influencing the achievement or non-achievement of the objectives?

1.2.4. Did partnership factors negatively or positively influence your ability to achieve objectives?

Did operational factors (such as the environment, staff etc negatively or positively influence your ability to achieve objectives?

Did financial and budgeting factors negatively or positively influence your ability to achieve objectives?

Did time management factors negatively or positively influence your ability to achieve objectives?

Did partnership factors negatively or positively influence your ability to achieve objectives?

1.2.5. What unintentional benefits did HPs incur through participation in the CWPAMs programme?

2. THE VALUE TO THE NHS OF ITS VOLUNTEERS PARTICIPATING IN THE CWPAMS HP AND EVIDENCE OF A SKILLS EXCHANGE BETWEEN UK VOLUNTEERS AND THEIR COUNTERPARTS IN THE LMIC?

OECD-DAC CRITERIA: Impact

2.1. How many and which health care workers (UK/LMIC) were reached?

2.2. What is the benefit of CwPAMS to the NHS?

Did the HP achieve at least 65 percent of the target number of days training for NHS volunteers/ number of NHS volunteers receiving training?

Did the HP achieve at least 65 percent of its target in terms of demonstrating that NHS volunteers have improved knowledge and understanding of AMS in LMICs?

Did the HP achieve at least 65 percent of its target in terms of demonstrating that NHS staff have improved leadership skills and understanding of the global AMR context?

Is there evidence of demonstrated leadership skills by NHS volunteers within their UK institution?

Did NHS volunteer demonstrate awareness of the global context of AMR in their work after their participation in the HP?

2.2.1. What skills did the LMIC volunteers gain?

Did the volunteers find the skills they gained were relevant to their individual practise and/or context?

2.2.2. What skills did the UK volunteers gain?

Did the volunteers find the skills they gained were relevant to their individual practise and/or context?

- How have institutions actively included these new skills or experiences? (i.e. presentation of learning to management or training of fellow healthcare professionals)

3. WHAT IS THE POTENTIAL FOR SCALING UP AMS IN NATIONAL AMR ACTION PLANS?

OECD-DAC Criteria: Efficiency, Sustainability

3.1. What systems have been put in place as a result that will influence sustainability?

OECD-DAC Criteria: Sustainability

Does the HP have an exit strategy?

- Is it effective (i.e.? will it sustain the HP benefits into the future)?
- Is it being implemented?

Did the HP develop tools, processes and guidelines specific to the LMIC-context?

Will the hospitals be able to sustain the AMR interventions without additional funding after the completion of the HP?

Did the LMIC Partner think that the partnership was equitable?

Did the UK Partner think that the partnership was equitable?

3.2. Was the HP implemented in an economically justifiable way under the given circumstances?

OECD-DAC Criteria: Efficiency

Did you consider similar HPs/studies where costing and budgeting was considered effective?

When costing and budgeting was undertaken did CwPAMS have regard for alternative AM interventions and their financial considerations? (i.e. did you consider the opportunity cost of the stewardship approach)

Did the budget achieve allocational efficiency? i.e. represent an optimal distribution of financial capital to HPs (inputs= actual/realised benefits)

- was there a budget approval process which examined whether the HPs were anticipating adequate returns?
- Did the HP exceed its budget?
- Were HPs evaluated after inception to ensure that they were operating within the specified budget?

ANNEX C: PROGRAMME SCORECARD

PoC i) To what extent has the CwPAMS programme improved antimicrobial stewardship in LMIC partner healthcare institutions?	Guide	A02	A04	A05	A07	A11	B01	B02	B03	B08	B09	B10	B12	Total
How relevant was the support of CPA? THET? In terms of enabling LMIC/UK institutions to achieve the HP goals?														
Did the Partnership receive the expected support from CPA?														
Did the project have an appointed fellow?	Y=1 N=0	0	1	1	1	1	1	1	1	1	1	1	1	11
Did the fellow facilitate adequate communication between CPA and the HPs? (If adobe is N, do not answer this question)	Y=1 N=0		1	1	1	1	1	1	0	1	1	1	0	9
Did the project receive bespoke training and/or materials from CPA during the course of project?	Y=1 N=0	1	1	1	0	0	1	1	0	1	1	1	0	7
Did CPA establish relationships between the projects and relevant networks both at the inception stage and during the course of the project?	Y=1 N=0	1	1	0	1	1	0	1	1	0	1	1	1	9
Did the Partnership receive the expected support from THET?														
Did the project receive adequate support on reporting, monitoring and evaluation from THET?	Y=1 N=0	1	1	1	0	1	1	0	1	0	1	1	1	9
Did you find reporting overly cumbersome	Y=0 N=1	0	0	1	0	1	0	0	1	1	0	1	0	5
Did THET serve as an effective first line of communication for projects answering queries in a timeous manner?	Y=1 N=0	1	1	1	1	1	1	1	1	1	1	1	1	12
	Count	6	7	7	7	7	7	7	7	7	7	7	7	
	Score	67	86	71	57	86	71	71	71	71	86	100	57	**76**
To what extent was the CwPMAS Programme designed to meet the needs of its beneficiaries?														
Was an initial scoping exercise undertaken to identify beneficiary needs?	Y=1 N=0	1	1	1	1	1	1	1	1	1	1	1	1	12
Did the HP integrate Gender Equality and Social Inclusion ('GESI') into their project	Y=1 N=0	1	1	1	1	1	1	1	1	1	1	1	0	11
Were the project activities, objectives, and outcomes context specific?	Y=1 N=0	1	1	1	1	1	1	1	1	1	1	1	1	12
Was AMR a recognised issue in the country?	Y=1 N=0	1	1	1	1	1	1	1	1	1	1	1	1	12
	Count	4	4	4	4	4	4	4	4	4	4	4	4	
	Score	100	100	100	100	100	100	100	100	100	100	100	75	98
Was the actual timeline of development and implementation realistic? Were the objectives achieved on time?														
Were activities/outputs/outcomes completed in the specified time?	Y=1 N=0	1	1	0	0	0	0	0	1	0	1	0	0	4
Did projects report an increase in the cumulative outputs and outcomes at each quarter (unless the initial plan required otherwise)?	Y=1 N=0	1	0	0	0	1	1	0	1	0	0	0	0	4
Did the project commence on time (receive funding, ethics approval etc on time)?	Y=1 N=0	1	1	0	0	1	0	0	1	0	0	0	0	4
Did the project report unplanned delays? Or report any significant changes in project time spans? (These should not be resultant from Covid-19-related effects)	Y=0 N=1	1	1	0	0	0	0	1	1	0	0	0	0	4
	Count	4	4	4	4	4	4	4	4	4	4	4	4	
	Score	100	75	0	0	50	25	25	100	0	25	0	0	**33**
Were the initial objectives realistic?														
Did the project meet at least 50 percent of its targets?	Y=1 N=0	1	0	1	1	1	1	1	1	0	0	1	0	8
Were activities, outcomes, or outputs significantly revised during the course of the project?	Y=0 N=1	1	1	0	0	0	0	0	1	0	1	1	1	6
Did the LMIC partner think that the objectives and targets of the project were manageable?	Y=1 N=0	1	0	1	0	1		1				1	1	6
Did the UK partner think that the objectives and targets of the project were manageable?	Y=1 N=0	1	1		1	1	1	1	1	1	1	0	0	9
Did the HP revise the project informed by the first in-country visit?	Y=1 N=0	1	0	1	0	0	1	0	1	1	0	0	0	5
	Count	5	5	4	5	5	4	5	4	4	4	5	5	
	Score	100	40	75	40	60	75	60	100	50	50	60	40	**63**
To what extent has CwPAMS influenced AMS policy?														
Did the project aim to address (local) priorities and contribute to the implementation of the national action plans?	Y=1 N=0	1	1	1	1	1	1	1	1	1	1	1	1	12
Did the HP publish any peer-reviewed articles, official policy papers or other relevant publications?	Y=1 N=0	1	1	1	1	1	1	1	1	0	1	0	0	9
Has the project established formal partnerships/links with any government/ civil society actors or other groups active in the AMS policy domain (local, regional or national level)?	Y=1 N=0	1	1	1	1	1	1	1	1	1	1	1	1	12
Have any government papers officially recognised the partnership, HP, CwPAMS?		0	0	0				0	0	1	1	0	1	
	Count	4	4	4	3	3	3	4	4	4	4	4	4	
	Score	75	75	75	100	100	100	75	75	75	100	50	75	**81**
To what extent were the objectives achieved?														
Did the project address at least 2/3 the Fleming fund objectives?	Y=1 N=0	1	1	1	1	1	1	1	1	1	1	1	1	12
Did the project develop and support the implementation of protocols/guidelines for AMR surveillance and AM use?	Y=1 N=0	1	1	1	1	1	1	1	1	1	1	1	1	12
Are the protocols/guidelines for AMR surveillance and AM use, are these in line with international/national guidelines?	Y=1 N=0	1	1	1	1	1	1	1	1	1	1	1	1	12
	Count	3	3	3	3	3	3	3	3	3	3	3	3	
	Score	100	100	100	100	100	100	100	100	100	100	100	100	**100**
What is the programme impact on the pharmacy workforce (upskilling, roles created, inclusion in/leading of AMS teams, policy groups etc.)?														
Did the HP create new roles (or upskilling) for their pharmacy workforce?	Y=1 N=0	0	1	1	1	1	1	1	1	1	1	1	0	10
Did the HP foster new links with national pharmacy associations?	Y=1 N=0	0		1	1	1	0	1	1	0	1	1	1	8
	Count	2	1	2	2	2	2	2	2	2	2	2	2	
	Score	0	100	100	100	100	50	100	100	50	100	100	50	**79**
Number of questions answered		28	28	28	28	28	27	29	28	28	28	29	29	
Total		82	79	71	64	82	74	72	89	64	79	72	55	**74**

PoC ii) Does the health partnership approach improve antimicrobial stewardship in LMIC partner healthcare institutions and staff?	Guide	A02	A04	A05	A07	A11	B01	B02	B03	B08	B09	B10	B12	Total
Which factors contributed to the changes that were generated?														
To what extent has CwPAMS generated or is expected to generate significant positive or negative, intended or unintended, higher-level effects?														
Did the HP generate significant positive impact on the LMIC workforce and associated decision makers?	Y=1 N=0	1	1	1	1	1	1	1	1	1	1	1	1	12
What were the major factors influencing the achievement or non-achievement of the objectives?														
Did partnership factors negatively or positively influence your ability to achieve objectives?	P=1 N=0	1	1	1	1	1	1	1	1	0	1	1	1	11
Did operational factors negatively or positively influence your ability to achieve objectives?	P=1 N=0	1	0	0	1	1	1	0	1	1	1	1	0	8
Did financial/budgeting factors negatively or positively influence your ability to achieve objectives?	P=1 N=0	1	0	0	0	1	1	0	0	0	1	1	0	5
Did time management/ project planning factors negatively or positively influence your ability to achieve objectives?	P=1 N=0	1	1	1	0	0	1	1	1	1	1	1	1	10
	Count	4	4	4	4	4	4	4	4	4	4	4	4	
	Score	100	50	50	50	75	100	50	75	50	100	100	50	71
What unintentional benefits did HPs incur through participation in the CwPAMS programme?														
Was there evidence that the project generated significant positive, intended higher-level effects?	Y=1 N=0	1	1	1	1	1	1	1	1	1	1	1	1	12
Did the project generate significant positive, unintended higher-level effects? (such as funding interventions that became relevant in the Covid-19 context)	Y=1 N=0	1	1	1	1	1	1	1	1	0	1	1	0	10
	Count	2	2	2	2	2	2	2	2	2	2	2	2	
	Score	100	100	100	100	100	100	100	100	50	100	100	50	92
Number of questions answered		7	7	7	7	7	7	7	7	7	7	7	7	
Total		100	71	71	71	86	100	71	86	57	100	100	57	81

What is the value to the NHS of its volunteers participating in CwPAMS, and is there evidence of a "skills exchange" between UK volunteers and their counterparts in the LMIC?	Guide	A02	A04	A05	A07	A11	B01	B02	B03	B08	B09	B10	B12	Count
How many and which health care workers (LMIC/UK) were reached?														
What is the benefit of CwPAMS to the NHS?														
Did the project achieve at least 75 percent of its target in terms of number of NHS volunteers taking part in the project?	Y=1 N=0	1			1	1	0	1	1	0	1	1	1	8
Is there evidence of demonstrated leadership skills by NHS volunteers within their UK institution?	Y=1 N=0	1	0	0	1	1	1	0	1	1	1	1	0	8
Upon returning to the UK, did NHS volunteers demonstrate awareness of the global context of AMR in their work after their participation in the project?	Y=1 N=1	1	0	1	1	1	1	0	0	1	0	0	0	6
Did the project achieve at least 75 percent of its target in terms of demonstrating that NHS staff have improved leadership skills and understanding?	Y=1 N=0	1	1	1	1	0	1	0	0	0	0	1	0	6
	Count	4	3	3	4	4	4	4	4	4	4	4	4	
	Score	100	33	67	100	75	75	25	50	50	50	75	25	60
What skills did the LMIC volunteers gain?														
Did the LMIC volunteers find the skills they gained were relevant to their individual practice and/or context?	Y=1 N=0	1	1	1	1	1	1	1	1	0	1	1	1	11
What skills did the UK volunteers gain?														
Did the UK volunteers find the skills they gained were relevant to their individual practice and/or context?	Y=1 N=0	1	1	1	1	1	1	1	1	1	1	1	0	11
Did the UK institution incorporate the knowledge and skills of their volunteers?	Y=1 N=1	1	1	1	1	1	1	0	1	1	1	1	0	10
	Count	2	2	2	2	2	2	2	2	2	2	2	2	
	Score	100	100	100	100	100	100	50	100	100	100	100	0	88
Number of questions answered		7	6	6	7	7	7	7	7	7	7	7	7	
Total		100	67	83	100	86	86	43	71	57	71	86	29	73

What is the potential for scaling up AMS in National AMR Action Plans?	Guide	A02	A04	A05	A07	A11	B01	B02	B03	B08	B09	B10	B12	Count
What systems have been put in place as a result that will influence sustainability?														
Does the project have an exit strategy?	Y=1 N=0	1	1	1	1	1	1	1	1	1	1	1	1	12
Is the exit strategy being implemented?	Y=1 N=0	1	1	1	1	1	1	1	1	1	1	1	0	11
Did the project develop tools, processes and guidelines specific to the LMIC-context?	Y=1 N=0	1	1	1	1	1	1	1	1	1	1	1	1	12
Will the hospitals be able to sustain the AMR interventions without additional funding after the completion of the project?	Y=1 N=0	1	0	0	1	1	0	1	1	1	1	1	1	9
Does the HP intend to continue its partnership after the project has ended?	Y=1 N=0	1	1	1	1	1	1	1	1	0	1	1	1	11
Did the LMIC Partner think that the partnership was equitable?	Y=1 N=0		1	1	1	1	1	1	1	0		1	1	9
Did the UK Partner think that the partnership was equitable?	Y=1 N=0	1	1	1	0	1	1	1	1	1	1	0	0	9
	Count	6	7	7	7	7	7	7	7	7	6	7	7	
	Score	100	86	86	86	100	86	100	100	71	100	86	71	89
Was the HP implemented in an economically justifiable way under the given circumstances?														
Was progress achieved at reasonable costs?														
Did the budget achieve allocational efficiency? i.e. represent an optimal distribution of financial capital to projects (inputs= actual/realised benefits)	Y=1 N=0	1	0	0	1	1	1	1	1	1	1	1	1	10
Was there a budget approval process which examined whether the projects were anticipating adequate returns?	Y=1 N=0	1	1	1	1	1	1	1	1	1	1	1	1	12
Did the project stay within its budget? (i.e. 10 percent above or below*)	Y=1 N=0	1	1	0	1	1	1	1	1	1	1	1	1	11
Was project evaluated after inception to ensure it was operating within the specified budget?	Y=1 N=0	1	1	1	1	1	1	1	1	1	1	1	1	12
Did the project revise activities, outcomes, or outputs during the course of the project in order to respond to context or environmental challenges.	Y=1 N=0	1	1	1	1	1	1	1	1	1	1	1	1	12
	Count	5	5	5	5	5	5	5	5	5	5	5	5	
	Score	100	80	60	100	100	100	100	100	100	100	100	100	95
Number of questions answered		11	12	12	12	12	12	12	12	12	11	12	12	
Total		100	83	75	92	100	92	100	100	83	100	92	83	92

ANNEX D: LIST OF INFORMANTS

Health Partnerships

Grant ID	UK Lead	LMIC Lead	HP Fellow(s)
A02	✓	✓	✓
A04	✓	✓	✓
A05			✓
A07	✓	✓	✓
A11	✓	✓	✓
B01	✓		✓
B02	✓	✓	✓
B03	✓	✓	✓
B08	✓		✓
B09	✓		✓
B10	✓	✓	✓
B12	✓	✓	

Management

	Core CwPAMS Team	Country directors	Technical Advisor for Uganda	Independent Assessor
CPA	✓		✓	✓
THET	✓	✓		