Sensitizing molecular researchers towards the threat of antimicrobial resistance (AMR) by increasing knowledge and skills through training programs

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Introduction

- The growing prevalence of AMR is a global health challenge in LMICs that requires accurate and rapid diagnostic methods.
- Due to lack of knowledge, skills, and resources, researchers in LMICs are unable to develop molecular diagnostic capabilities.
- There is an urgent need to generate skilled manpower trained in studying AMR or its diagnosis using advanced methods.

Aim

- To develop a network of researchers with the knowledge and advance skills through online training programs involving molecular diagnostic methods to detect AMR

Objectives

- To develop an online training course in research skills for the diagnosis, monitoring, and study of AMR.
- To offer practical workshops at to participants who have satisfactorily completed the online-course.
- To fill a research skills gap in UKRI GCRF funded researchers of OHPH and associated networks.

A Training programme to build a network of researchers with expertise in molecular diagnostics to monitor and investigate antimicrobial resistance (AMR)

Inviting applications from researchers interested in AMR

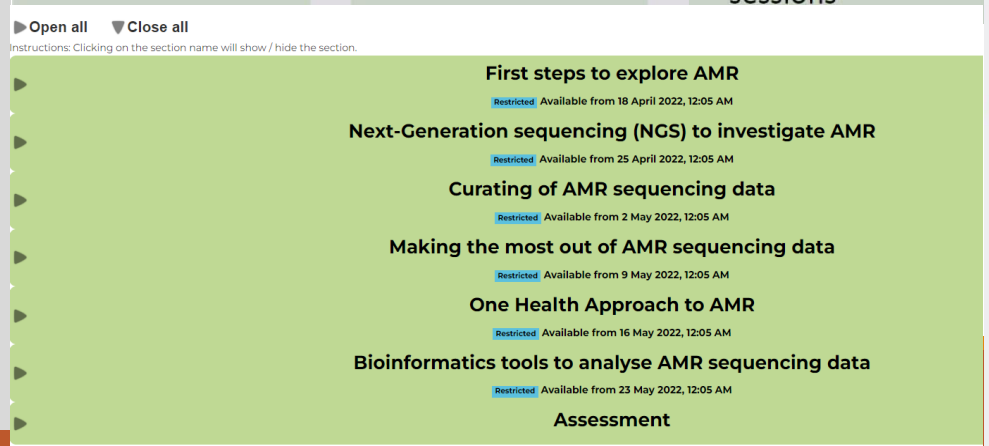
- Recruitment of participants was achieved through an online application form which was disseminated via various social media channels of OHPH, AAU and GBRC
- The application form included a variety of close-ended and open-ended questions. Alongside general questions regarding personal information questions were included from which the selection criteria were based upon.

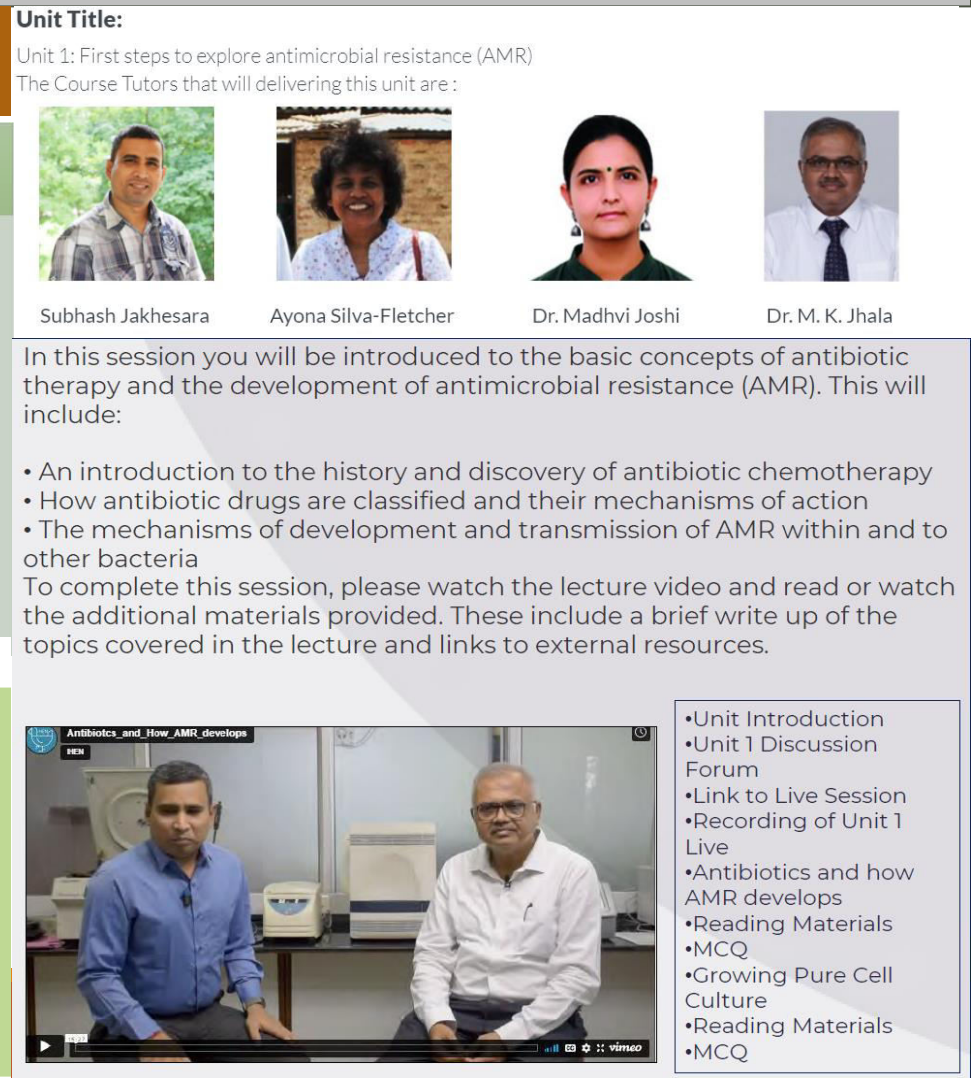
Methods

Enrolment of participants

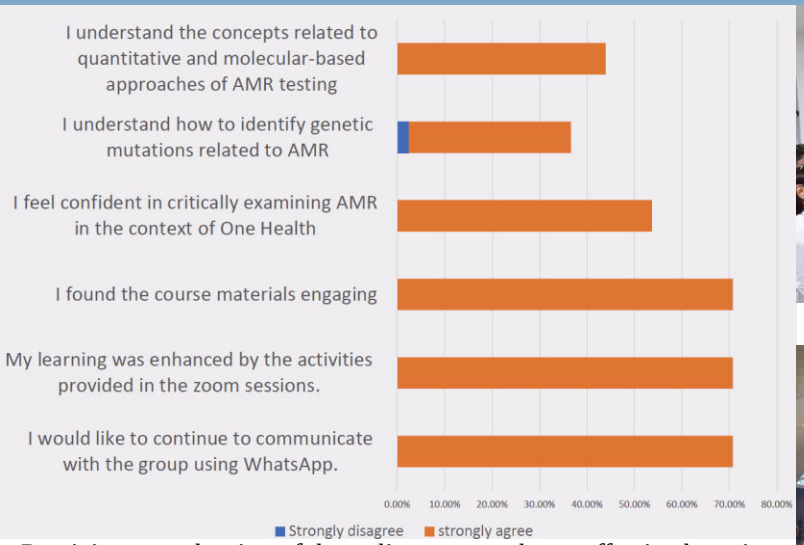
- The online training program has been conducted four times in 2021 and 2022 and the fifth course is currently ongoing.
- The application numbers have steadily increased from 432 (21 different countries) in 2021 to 1021 (47 different countries) in 2024.
- Three practical courses of 10-day duration with 10 participants in each course have been conducted

Online Course Development	Online Course Outline	Pedagogical Course Design
• Designed and implemented using iHEN, the OHPH online learning environment.	• Delivered over 6 weeks with an estimated total of 71 learning hours. • Course completion provides a total of 7 UK CATs credits.	• Weekly unit books • Video lectures for each unit module • Additional reading materials • MCQ learning checks • Weekly tutor-led live synchronous sessions





Results



Participant evaluation of the online course shows effective learning to gain confidence in detecting gene mutations of AMR.

Screen capture of an online synchronous zoom tutorial

Selected photographs from completed offline training programs in India

			Responses			
Overall	a	I found the course materials engaging	0	0	12	29
			0.00%	0.00%	29.27%	70.73%
	b	I am satisfied with the overall quality of the teaching throughout this course.	0	1	18	22
			0.00%	2.44%	43.90%	53.66%
	c	I now have a basic understanding of the material covered in this course.	0	0	19	22
			0.00%	0.00%	46.34%	53.66%
	d	I am able to integrate what I have learned in this course with my prior learning or existing research topic(s).	0	0	19	22
			0.00%	0.00%	46.34%	53.66%
	e	I now feel able to apply the knowledge I gained in the course.	1	0	19	21
			2.44%	0.00%	46.34%	51.22%

Course evaluation survey

Selected feedbacks from participants

"I'm looking at a broader picture of the collaborative one health approach"- a participant

Discussion

- The collaborations and researcher networks resulting from the training programs has led to submission of research projects based on AMR
- There is considerable increase of applicants interested in such programs which indicates need to implement such program at large scale.

Acknowledgement

We are thankful to BBSRC GCRF-STARS for providing financial assistance for conducting these training programs.

"I came here as raw data and going out as assembled sequence with a good quality score"

"Clear explanation of working principle and utilities. Kudos."