

# **Preliminary report on Antimicrobial resistance surveillance study**

## Introduction

In April 3, 2014, a memorandum of understanding between the Ministry of Health and the Department of Microbiology, University of Ghana Medical School was signed (MoH/DM-UGMS/2014). The ADMER project was to conduct this surveillance study.

**Aim:** The overarching aim is to conduct a national surveillance of antibiotic resistance in Ghana.

**Specific objectives:**

- I. to train/retrain selected laboratory technologists, and to harmonize protocols for carrying out susceptibility tests
- II. to collate and analyze surveillance data on antimicrobial resistance within six months after training
- III. to monitor and evaluate surveillance data, and to perform specific additional tests (eg. MICs and carbapenemase)
- IV. to create a repository of collected isolates for future studies

## **Objective 1:**

To achieve objective 1, the country (Ghana) was divided up into two sectors for training - southern and northern.

## Training dates

Training for the southern sector was done in May 12 - 15, 2014 in Accra, at the Microbiology Department,

UGMS. Lectures were done in the Conference Room of the Department and hands on activities were done at the School of Allied Health Laboratory all in Korle-Bu. A total of 19 participants attended the southern workshop - list and facilities attached.

A pre-training survey from 13 respondents indicated that the common specimens cultured in these facilities included urine, HVS, wound and ear swabs, blood and CSF. Media used for susceptibility testing from these facilities varied, and included Mueller Hinton agar, sensitivity test agar, nutrient agar and blood agar base. Though most of the facilities stated that they use the Kirby Bauer disk diffusion test, they did not adhere to standard procedure. For example some of the facilities seed agar plates by pouring and decanting bacterial suspension onto agar plates, without using cotton swabs to seed their inoculum. Standards like MacFarland and control strains were often not used. With the exception of the Korle-Bu Teaching Hospital (Central Laboratory) that includes control strains as part of their test, all the other facilities do not have control strains and do not use one.

Lab consumables were a major challenge for almost all the facilities. The respondents reported that they often run short of suppliers. Lab consumables were also procured from varied sources, including India, Italy and UK.

Training for the northern sector was done in May 19 - 21, 2014 in Kumasi, at the Biochemistry

Laboratory, Graduate Complex, KNUST. Lectures and hands on practical sessions were done in the same spacious facility. A total of 13 participants attended the northern sector workshop - list and facility attached.

A pre-training survey from 10 respondents indicated that the common specimens cultured by these facilities included urine, wound swabs, blood, HVS and sputum. Similarly to the southern sector, there were challenges with susceptibility testing standards and procurement issues.

#### Training Logistics & consumables

Unfortunately, we received the cheque for the training on May 7, 2014. Though this cheque was presented to Standard Chartered Bank on May 8, 2014, it was not cleared until June 26, 2014. Planning and execution of the study was therefore very difficult. Money, laboratory consumables and other resources from the ADMER project was used to meet the training schedules. The budget for the training, which was drafted in 2013 had been seriously affected by the depreciating cedi.

#### Training facilitators and materials

The facilitators for both the southern and northern sectors included Prof. Mercy J. Newman, Doctors Japheth A. Opintan and Eric S-Donkor, and Mr. William Mills-Pappoe. Laboratory technologist, research assistants and other supporting staffs assisted the facilitators.

Each participant received a file with training materials. As part of the training lectures, the theoretical basis, factors affecting and interpretation of

susceptibility results were discussed. Items for the practical sessions were adequately prepared for prior to the training. These included both clinical and control bacteria isolates, media and standards, broths etc. Participants performed susceptibility tests using their own methods and performed another test using standards and what they were thought. They had opportunity to compare the two results.

#### Post-training assessment

Participants responded that the training was helpful. Some of the new things they indicated they have learnt included how to screen for ESBLs, prepare standard inoculum and how to use controls. As to whether the training will be helpful to set up an AMR surveillance system, all participants responded positive. Responses to what must be improved in subsequent training included power point slides, lab session should be individual basis and not group work, identification and media preparation session to be included, exhaustive course outline provided, invitation letter to be more detailed and refresher trainings.

#### Post training and the way forward

Originally, it was anticipated that the facilities would use their own laboratory consumables to generate the data needed. Most of the facilities however did not have some basic items like antibiotic discs, Mueller Hinton agar and swab sticks. Such consumable bought for the training, monitoring and qualities were given out for the facilities in critical need. These were not budgeted for in the original proposal.

In addition to some consumables received by some facilities, each facility also received an arch file containing surveillance data sheets, agar slopes for stocking bacteria isolates and control strains.

*Preliminary surveillance data*

We have had good collaboration from some facilities in terms of data generation and reporting whilst others are dragging their feet despite follow up calls.

The table adjacent shows the respective facilities and data received from them as at July 8, 2014.

Facility by region	Code	Received data
<b>Gt. Accra region</b>		
Tema General Hospital	AcT	16
Korle Bu Teaching Hospital	AcK	158
LEKMAN Hospital	AcL	18
National Public Health Reference Lab	AcP	0
Rridge Hospital	AcR	0
37 Military Hospital	Ac3	0
<b>Central region</b>		
Central Region Teaching Hospital	CeT	6
Central Reional Hospital	CeC	0
<b>Western region</b>		
Sekondi PHL	WsE	44
<b>Eastern region</b>		
Tetteh Quarshie Memo Hospital	EaT	11
Koforidua Regional Hispital	EaK	15
Holy Family Hospital Nkawkaw	EaN	7
<b>Brong Ahafo region</b>		
Brong Ahafo Regional Hospital	BaS	93
Holy Family Hospital Berekum	BaB	3
Kintampo Municipal Hospital	BaK	0
<b>Upper East region</b>		
Upper East Regional Hospital Wa	UeB	1
Navrongo War Memorial Hospital	UeW	0
<b>Ashanti region</b>		
Komfo Anokye teaching Hospital	AsK	4
St. Patricks Hopital Offinso	AsO	5
Agogo Hospital	AsA	0
Kumasi South PHL	AsP	0
<b>Volta region</b>		
Volta Regional Hospital	VoV	29
<b>Northern region</b>		
Tamale Teaching Hospital	NoT	0
<b>Upper west region</b>		
Upper West Regional Hospital	UwR	0
<b>Data received</b>		410