

African Conference on Antibiotic Use and Resistance, 18-20 March 2015

The African Conference on Antibiotic Use and Resistance (153 participants from six countries) had the following focus areas, each covered by one or more sessions:

1. Antimicrobial resistance (AMR) in Gram-negative and Gram-positive pathogens in humans, in production animals and in the environment.
2. Antibiotic drug quality.
3. Antibiotic consumption in humans in the community, in hospitals and in production animals.
4. Sociological and anthropological studies on perceptions of antimicrobial prescriptions both in prescribers and in patients.
5. Policy issues.

The main findings are:

1. **Extended Spectrum Beta-Lactamases (ESBL) producing *E. coli*** are resistant towards most beta-lactam antibiotics except a few penicillins and cephalosporins as well as carbapenems, and are also often resistant towards a range of other antibiotics. Carriage of such ESBL *E. coli* in Ghana were found in around 50% of people living in the community and in 40% of patients admitted to hospitals. In hospitals 40% of patients acquired faecal carriage of new ESBL producing *E. coli* during admission. *E. coli* from blood cultures were ESBL producers in 40%. ESBL producing *E. coli* were also found in chicken meat and in swimming pool water.
High *Salmonella* flock prevalence (44.0%) was recorded in poultry in Ghana. *Salmonella* isolates obtained from humans and poultry showed moderate to high resistance to Tetracycline, cephalosporins,

Trimethoprim as well as Nalidixic acid and ciprofloxacin.

ESBL production was present in up to 79.3% of *Salmonella* isolates from humans and chicken including human blood and stool culture isolates. The prevalence of bacteraemic *Salmonella* is highest in children around the age of 5 years (Ghana).

Streptococcus pneumoniae carriage among children under 6 years was 32%, intermediate penicillin resistance was 45% and only two isolates (0.7%) demonstrated full penicillin resistance (MIC>32µg/ml). Penicillin can still be used in treating non-invasive pneumococcal infections such as otitis media and pneumonia without bacteremia as stipulated in the 2010 standard treatment guidelines. However, with respect to invasive pneumococcal infections benzyl penicillin is not recommended rather the third generation cephalosporin is most appropriate.

Staphylococcus aureus are frequently resistant to penicillin (95%) and tetracycline (36%). Nasal carriage prevalence of Methicillin Resistant *S. aureus* (MRSA) are relatively low (2%) among individuals outside hospital settings but high (10%) among surgical patients (Ghana).

2. A large study on the **quality of antibiotics** dispensed from pharmacies at hospitals and in townships as well as from street vendors was conducted (35 sources). Tablets/capsules were overall of low quality (measured by LC-MS/MS), i.e. ranging from 15-88% of label guaranty (LG), followed by suspensions and sterile products, which had the better quality amongst the various formulations. Generally most antibiotics

were of low quality (over 60% had a percentage content < label guaranty (LG)). The quality of antibiotics obtained from street vendors was of the lowest quality (91% of samples obtained from this source were substandard). This source is usually the first point of call by consumers and patients because of convenience and affordability.

3. Since **antibiotic consumption data** are very difficult to assess in Ghana, a novel method was used to evaluate the prevalence of antibiotic use. Urine from humans/patients was sampled and analyzed for 10 different antibiotics by LC-MS/MS. Up to 70 % of community dwellers, who denied having taken antibiotics in the previous 14 days had at least one antibiotic found in their urine. **Antibiotic residues** were found in chicken meat, river water and water used for irrigation. All revealing extremely high antibiotic exposure for humans in Ghana.

4. **Antibiotics prescribed** for patients in hospitals were never based on microbiology report, according to a study from the Eastern Region, even if samples had been taken. Most patients received more than one drug from the beginning. A large study from the Brong Ahafo Region was conducted on prescription patterns and patient chart follow-up on more than 2660 cases. In Brong Ahafo, prescriptions are mostly made by medical assistants (MA) and nurses, and only in 20% of cases by physicians. Every second patient received an antibiotic. A questionnaire on antibiotic prescriptions issues revealed, that knowledge about effect of antibiotics on viral diseases, duration of treatment, etc., were best reflected by physicians, and poorest reflected among MA's and nurses. In another study, interviews of doctors and patients (Ghana) illustrated that doctors have little time for

each patient. They prescribe antibiotics without clinical examination, microbiological sampling, instructions or information about indications or disease.

5. Mrs Edith Anann from WHO reminded the audience about the **WHO Global Action Plan**, which will be launched in May 2015. Mrs Martha Gyansa-Lutterodt summarized the actions taken on the AMR policy in Ghana, which seem to be spearheading the AMR issues in Africa.

Discussions and conclusions on future actions needed:

- All participants acknowledge AMR as a serious health security risk.
- WHO member countries will sign the Global Action Plan. It is important, that participants go back and implement the plan in their countries.
- There is so much data on all AMR issues now that we need immediate implementation plans.
- Surveillance of antibiotic resistance and antibiotic consumption is essential to conduct sensible antibiotic policy and to monitor effect of interventions.
- Surveillance of AMR needs to be funded by governments/authorities. Most laboratories in Africa need material and knowhow in order to produce meaningful data.
- Establish reference laboratories in all regions in all countries, which can spearhead surveillance on AMR, help controlling public and private laboratories, and participate in educational programmes.
- Improve quality of antibiotic drugs; continuous monitoring systems must be set in place with independent authorities with up-to-date methods conducting pre- and postmarketing surveillance with relevant legal enforcement methods in place.

- Quality control, auditing and peer reviewing should be introduced nationwide in all hospitals and health care facilities to improve infection control and antibiotic stewardship.
- Enforce discipline among health professionals; e.g. follow infection control measures, antibiotic treatment guidelines, etc.
- Implement the one-health approach in order to involve all sectors responsible for antibiotic use (e.g. Ministries of Health, Veterinary, Fisheries, Agriculture, etc.)
- Improvement of antibiotic prescription and infection control must be both top-down and down-up. Involve all health personnel by introducing champions (e.g. "queen mothers") who are educated to conduct simple control and educational measures in each unit or department.
- General enforcement of already available laws, e.g. prescription rules, which are not followed by quack doctors, pedlers, pharmacies, chemical shops, etc.
- There is an urgent need for research in possible antibiotic presence in widely used herbal medicine.
- Introduce a database on projects that are planned or ongoing in order to increase transparency in AMR actions taking place.
- Basic hygiene and infection control should be prioritized both at home and in institutions, hospitals, etc.
- Industry in Africa should be engaged in providing cheap, but effective means of supporting actions on infection control, laboratory diagnostics, hospital equipment, etc.
- Introduce AMR issues including hygienic measures in school curriculum at all levels.
- Use and involve media in AMR issues: the media can disseminate knowledge to all sectors in society and have been instrumental in European countries in pressing policy makers to act.