Current Health Event

Antimicrobial Resistance

Antimicrobial Resistance (AMR) is an increasingly serious global problem that threatens both human and animal health. If no strong, coordinated action is taken soon by the global community, common infections, previously considered minor, will soon become life threatening.

Editorial note:

AMR is the ability of a microorganism to stop an antimicrobial from destroying it. Consequently, standard treatments fail and the infection remains. Pneumonia, tuberculosis, gonorrhea, and many other infections are now harder to treat since antibiotics are becoming alarmingly less effective. Moreover, a WHO report published in September 2017 discusses the serious lack of new antibiotics under development to fight the rising threat of AMR.

In 2013, the CDC estimated that AMR in the United States caused at least 2,049,442 illnesses and 23,000 deaths. The problem is global and multisectoral, in many countries antibiotics are overused and misused in animals and humans, and often without a physician or veterinary's prescription or guidance. To face this challenging threat and prevent the worsening of its impact on global public health; WHO, FAO and OIE are joining their expertise through a multidisciplinary 'One Health' approach to fight AMR.

In Lebanon, AMR is a public health issue that is caused by numerous factors. A pilot study conducted in Lebanon found that around 72% of antibiotic prescriptions did not adhere to medical guidelines (*Saleh et al, 2015*). Another study assessing antibiotic dispensation by Lebanese pharmacists showed that 32% of antibiotics are dispensed without prescription (*Farah et al, 2014*). A recent cross sectional study found a gap in knowledge and attitude towards antibiotic use in Lebanon; 57.4% stop taking the drug if the symptoms resolve, 42% preferred to buy antibiotics without a

prescription, and around 33% thought that it is better to take antibiotics to treat a cough, flu or a sore throat (*Khalifeh et al, 2017*). Results from a study done on bacteriology laboratory records from 16 hospital in Lebanon revealed an increase in AMR in selected pathogens (*figure 1*)

In the animal husbandry sector, antibiotic overuse and misuse practices are happening at an alarming rate. In a recent study conducted by the Lebanese National Council for Scientific Research in collaboration with the Ministry of Agriculture (MOA), animal products were collected and tested; 55.5% of the poultry samples were positive for at least 1 of 14 types of antibiotics detected, 15.5 % of the meat samples for at least 1 of 4, and 38% of the milk samples for at least 1 of 15.

The Ministry of Public Health (MOPH) set AMR as one of its high priorities; in this regard the National AMR Committee, with the support of WHO, developed a national action plan to combat the emerging threat of AMR. In 2017, WHO supported the implementation of numerous components of the plan in collaboration with the MOPH and the MOA. Guidelines and standard operating procedures (SOPs) for human and animal laboratories were developed, awareness raising sessions addressing farmers were implemented, laboratory proficiency exercises were conducted, and hospitals were trained on the SOPs and the use of the WHONET software in order to share AMR-related data from Lebanon through the Global AMR Surveillance System (GLASS).

Figure 1: Surveillance of antimicrobial resistance in Lebanese hospitals

Percent Susceptibility			Percent Resistance		
Streptococcus pneumoniae	Oxacillin	46%	*Staphylococcus aureus*	Methicillin	27.6%
	Erythromycin	63%			
	Levofloxacin	98%			
Streptococcus pyogenes	Erythromycin	94%	*Enterococcus spp*	Vancomycin	1%
	Clindamycin	95%	*Acinetobacter spp*	Colistin	17.1%
Haemophilus influenzae	Ampicillin	79%			
Salmonella spp	Ampicillin	81.3%	**Extended-spectrum Beta-lactamase Production Rate**		
Shigella spp	Ampicillin	62.2%	*Escherichia coli*		32.3%
Pseudomonas spp	Piperacillin–tazobactam	79.7%	*Klebsiella spp*		29.2%
	Imipenem	72.8%			

Ref: Chamoun et al, 2016

Lebanon's National AMR Action Plan is in line with WHO's Global Action Plan on AMR that has 5 strategic objectives: To improve awareness, to strengthen surveillance and research, to reduce the incidence of infection, to optimize the use of antimicrobials, and to ensure sustainable investment in countering AMR.

Notifiable Diseases in Lebanon
[cumulative n° of cases among all residents (among Syrians)]
as of 2 January 2018

Disease	2016	2017	Nov.	Dec.
Vaccine Preventable Diseases				
Polio	0 (0)	0 (0)	0 (0)	0 (0)
AFP	123 (17)	75 (19)	4 (2)	3 (1)
Measles	44 (18)	129(52)	7(4)	21 (14)
Mumps	486 (86)	230(47)	15 (6)	6 (3)
Pertussis	97 (18)	90 (22)	2 (1)	3 (2)
Rabies	0 (0)	1 (1)	0 (0)	0 (0)
Rubella	12 (6)	10 (6)	0 (0)	0 (0)
Tetanus	2 (0)	0 (0)	0 (0)	0 (0)
Viral Hep. B	367 (48)	319(52)	25 (4)	15 (3)
Water/Food Borne Diseases				
Brucellosis	402 (165)	456 (149)	16 (1)	10 (0)
Cholera	0 (0)	0 (0)	0 (0)	0 (0)
Hydatid cyst	11 (2)	18 (5)	1 (1)	2 (0)
Typhoid fever	598 (11)	654(19)	51 (1)	25 (3)
Viral Hep. A	519 (78)	775 (139)	107 (24)	68 (17)
Other Diseases				
Leishmaniasis	58 (52)	140 (116)	0 (0)	0 (0)
Meningitis	458 (63)	340(70)	20 (4)	8 (1)
Viral Hep. C	116 (8)	129 (10)	10 (1)	8 (0)