

## Short communication

### Zoonotic Diseases Diagnosed From Jan 2016 To Aug 2017 In Regional Veterinary Laboratories, Department Of Veterinary Services, Malaysia

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#### ABSTRACT

Infectious diseases of livestock are a major threat to global animal health and welfare and their effective control is crucial for agronomic health, for safeguarding and securing national and international food supplies and for alleviating rural poverty in developing countries. Some devastating livestock diseases are endemic in many parts of the world and threats from old and new pathogens continue to emerge, with changes to global climate, agricultural practices and demography presenting conditions that are especially favourable for the spread of arthropod-borne diseases into new geographical areas. Zoonotic infections that are transmissible either directly or indirectly between animals and humans are on the increase and pose significant additional threats to human health and the current pandemic status of new influenza A (H1N1) is a topical example of the challenge presented by zoonotic viruses (Tomley & Shirley, 2009). Malaysia, being one of the members of the World Organization for Animal Health (OIE) which is responsible for setting standards for control of animal diseases. For year 2017, the list includes 116 animal diseases, infections and infestations, many of which are zoonotic in nature. As such, this paper discusses the common zoonotic infections diagnosed in the five Regional Veterinary Laboratories which are spread across the country and entrusted to carry out diagnostic tests to aid in the treatment and control of animal diseases. A total of almost half a million samples are tested comprising more than a million tests done to help the Department of Veterinary Services to control and eradicate economically important diseases to safeguard the animal population. Of these, zoonotic diseases comprise a small but significant entity which needs careful attention (Chandrawathani et al., 2017)

Dora Tan (1981) has reported that among the many zoonotic diseases prevalent in Malaysia, are leptospirosis, rabies, influenza, Japanese encephalitis, toxoplasmosis, ornithosis, Q fever and monkeypox which have been investigated at the Institute for Medical Research, Kuala Lumpur. The regional laboratories have full capability to conduct tests to confirm parasitic, viral and bacterial infections except for rabies and avian influenza, which is diagnosed in the Veterinary Research Institute. However, preliminary tests for avian influenza can still be done in regional laboratories.

#### METHODS AND RESULTS

The diagnosis of animal diseases is conducted at 5 regional veterinary laboratories that is; Makmal Veterinar Kawasan (MVK) or Regional Veterinary Laboratories of the Department of Veterinary Services Malaysia namely as follows; MVK Kota Baru, MVK Kuantan, MVK Bukit Tengah, MVK Wilayah Tengah and MVK Johor Bahru. Samples are submitted to the laboratory by farmers or veterinarians based on clinical evidence of disease and subsequently the required tests are done

based on methods by OIE (<http://www.oie.int/en/animal-health-in-the-world/oie-listed-diseases-2017/>). The results of tests done are informed to the owner of the livestock within a stipulated time period to facilitate treatment and control of the disease. Table 1 shows the zoonotic infections diagnosed by the laboratories from January 2016 to August 2017. In analysing the parasitic diseases, *Toxocara* sp. Infections were reported in four laboratories from cats, either in faeces or post mortem findings. Other zoonotic parasites include *Notoedres* sp and *Toxoplasma* sp. albeit few in number of samples. *Fasciola* sp was also reported as it has a zoonotic potential and can be commonly found in cattle (Saleha, 1991). Among the bacterial diseases, it was noted that Salmonellosis, Brucellosis, Melioidosis, Q fever and Tuberculosis were diagnosed in the five regional laboratories indicating the importance of these as zoonoses. Brucellosis was seen in cattle and goats and Salmonellosis was seen in poultry. The viral diseases diagnosed was mainly Newcastle disease from all laboratories and Highly pathogenic avian influenza from MVK Kota Baru in 2017 due to the localised outbreak in Kelantan.

## DISCUSSION

Diseases of animal origin that can be transmitted to humans, such as avian influenza, rabies, and brucellosis, pose worldwide risks to public health. Other diseases which are mainly transmitted from person to person also circulate in animals or have an animal reservoir, and can cause serious health emergencies, such as the recent epidemic of Ebola virus. These risks increase with globalisation, climate change and changes in human behaviour, giving pathogens numerous opportunities to colonise new territories and evolve into new forms.

As human health and animal health are interdependent and bound to the health of the ecosystems in which they exist, it is important that a One Health concept be inculcated to combat zoonotic diseases. This concept is envisaged and implemented by the OIE as a collaborative global approach to understanding risks for human and animal health (including both domestic animals and wildlife) and ecosystem health as a whole. Zamri Saad & Kamaruddin (2016) have reported Brucellosis as 4-5% in bovines which could potentially infect humans through milk and contaminants in the farm. Salmonellosis has also been reported by Nidaullah et al (2017) and poses a significant finding in poultry as shown in the laboratory diagnoses. Nidaullah further reported *Salmonella* serotypes were isolated from 161 out of 182 samples (88.46%) with 100% prevalence in the whole chicken carcass and chicken cuts - as well as transport crate, cage, drum, knife, chopping board, display table, floor, bench wash water, wash water, and drain water. *Salmonella* was isolated from 91.67%, 83.33%, and 66.67% of defeathering machines, drain swabs, and apron, respectively. 17 serotypes were isolated in this study with *Salmonella* Albany (57/161), *Salmonella* Corvallis (42/161), and *Salmonella* Brancaster (37/161) being the predominant serovars. Leow et al (2011) reported that Newcastle disease commonly occurred throughout the year in a study from 2004 to 2006, largely dependent on the status of vaccination and presence of other concurrent diseases in the poultry.

The samples sent for diagnosis in the regional laboratories are dependent on requests from the field veterinarians as such this information may vary from year to year. From the information gathered in this paper, it can be concluded that the common viral diseases diagnosed for 2016 and 2017 are Newcastle disease and Avian Influenza, which was confirmed by the Veterinary Research institute; the bacterial diseases were Salmonellosis, Brucellosis and Melioidosis and least common was parasitic infections namely *Toxocara* infections in cats. The tasks of the regional laboratories are

important in gauging current diseases occurring in the farms or among pets. This is the earliest signs of an impending outbreak and it is important to monitor all cases submitted for diagnosis.

## REFERENCES

1. Tomley F.M. & Shirley M.W.(2009). Livestock infectious diseases and zoonoses

Philos Trans R Soc Lond B Biol Sci. 364(1530): 2637–2642.

2. DORA SK TAN ( 1981) . Some Zoonotic Diseases Prevalent In Malaysia. Malaysian J Pathol 4: 19-27
3. Chandrawathani , ... In Proc VAM 2017 6-8 oct 2017, Kuala Lumpur.
4. <http://www.oie.int/en/animal-health-in-the-world/oie-listed-diseases-2017/>
5. Saleha AA (1991). Liver fluke disease (fascioliasis): epidemiology, economic impact and public health significance. Southeast Asian J Trop Med Public Health. 1991 Dec;22 Suppl:361-4.
6. Zamri-Saad., M & Kamarudin M.I. (2016). Control of animal brucellosis: The Malaysian experience. Asian Pacific Journal of Tropical Medicine 9: 12: 1136-1140.
7. Nidaullah H, Abirami N, Shamila-Syuhada AK, Chuah LO, Nurul H, Tan TP, Zainal Abidin FW, Rusul G (2017) Prevalence of Salmonella in poultry processing environments in wet markets in Penang and Perlis, Malaysia, Veterinary World, 10(3): 286-292.
8. Leow L.L., Shajarutulwardah M.Y. and Ramlan M. ( 2011). Newcastle disease in Malaysia: diagnostic cases in Veterinary Research Institute (VRI) Ipoh from 2004-2009. Malaysian Journal of Veterinary Research 2:1: 45-51
9. Chandrawathani P., Tariq J., Saira Banu MR., Norasyikin A., Rohana AB., Faizah Hanim MS., Zulkifli A., Santhi M., Norlida O. & Marzuki Z. (2017). In Proc. 29<sup>th</sup> VAM Congress, 6-8 Oct 2017, Shah Alam, Selangor, Malaysia. Pp 113.

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**Table 1: Summary of Zoonotic Parasitic, Bacterial and Viral Disease.**

Regional Laboratory	Diseases	Organism/ Disease	Host species 2016	Total No. of samples (positive samples) <b>2016</b>	Host species (2017)	Total No. of samples (positive samples) <b>2017 ( up to aug)</b>
MVK Kota Baru	Parasitic Diseases	Toxocara			CAT	1(1)
	Bacterial Diseases	Brucella abortus	BUFFALO	15(2)	CATTLE	390(34)
			CATTLE	287(125)	BUFFALO	4(2)
		Brucella melitensis	SHEEP	37(8)	SHEEP	58(0)
			GOAT	300(27)	GOAT	328(4)
			CATTLE	2(1)	CATTLE	5(0)
		<i>Burkholderia pseudomallei</i>	SHEEP	30(8)	SHEEP	112(12)
			GOAT	80(1)	GOAT	112(4)
		Salmonella	POULTRY	102(17)	POULTRY	15(2)
			DUCK	38(22)	DUCK	15(2)
			AVIAN	68(7)		
	Q-Fever	GOAT	46(9)			
	Viral Diseases	HPAI (AI +VE)	POULTRY	157(1)	POULTRY	1351(14)
					POULTRY	182(4)
		HPAI (H5+VE)	POULTRY		POULTRY	1351(12)
					DUCK	98(1)
		HPAI +VE (H5N1)	POULTRY		POULTRY	1351(12)
		HPAI (ND+VE)	POULTRY		POULTRY	1351(5)
	MVK Kuantan	Parasitic Diseases	<i>Toxocara Cati</i>	CAT	1 (1)	
<i>Notoeders Cati</i>			CAT	1 (1)		
<i>Fasciola gigantica</i>			CAT	1 (1)		
Bacterial Diseases		<i>Salmonella Saintpaul</i>	POULTRY	1(1)	Colibacillosis (DEER)	1 (1)
		<i>Salmonellan Gallinarum</i>	POULTRY	1 (1)		
		<i>Salmonella spp</i>	POULTRY	3 (3)		
		<i>Salmonella Bargny</i>	POULTRY	1 (1)	Brucella	

		<i>Salmonella Brancaster</i>	POULTRY /DUCK	5 (5) 1(1)	(CATTLE)	29 (3)	
		<i>Salmonella Convalis</i>	POULTRY	1(1)			
		<i>Salmonella Tokoradi</i>	POULTRY	2 (2)			
		<i>Salmonella Weltevreden</i>	POULTRY	2(2)			
			SWIFTLET	1(1)			
		<i>Salmonella Fortunebourn</i>	POULTRY	1(1)			
		<i>Salmonella Lezenne</i>	POULTRY	1(1)			
		<i>Salmonella Thyphimurium</i>	POULTRY	2(2)			
	Viral Diseases	Newcastle Disease			POULTRY	13 (0)	
MVK Bukit Tengah	Parasitic Diseases	<i>Fasciola sp.</i>	GOAT	1(1)			
		<i>Toxacara cati</i>	CAT	1(1)			
	Bacterial Diseases	<i>Salmonella sp.</i>		POULTRY	51(5)	POULTRY	100(3)
				AVIAN	85(12)	AVIAN	75(4)
						DUCK	80(4)
		<i>Burkholderia pseudomallei</i>			GOAT	11(1)	
		<i>Brucellosis (serology)</i>		CATTLE	239(62)	CATTLE	80(33)
				GOAT	41(17)	GOAT	15(10)
				SHEEP	5(5)	SHEEP	6(4)
				BUFFALO	2(1)	PIG	35(14)
		<i>Tuberculosis (BOVIGAM)</i>	CATTLE	4(3)	CATTLE	5(2)	
	<i>Q-fever (serology)</i>		GOAT	38(6)	GOAT	31(2)	
			CATTLE	3(1)			
Viral Diseases	Newcastle Disease	AVIAN	120(24)	AVIAN	12(4)		
MVK Wilayah Tengah	Parasitic Diseases	Toxocara sp.			DOG	1(1)	
		<i>B.abortus</i>	CATTLE	371(110)	CATTLE	215 (71)	
	Bacterial Diseases	<i>Bru.melitensis</i>	GOAT	36 (19)	GOAT	35 (12)	

		Tuberculosis	CATTLE	147 (28)	CATTLE	378 (39)
		Q Fever	GOAT	4 (1)	GOAT	11 (3)
		<i>Burkholderia pseudomallei</i>	ALPACA	6(1)		
			BOVINE	1(1)		
			CAPRINE	1(1)		
Viral Diseases	Newcastle Disease (ND)	AVIAN	1064(60)	AVIAN	502(6)	
MVK Johore Bahru	Parasitic Diseases	Toxoplasmosis	CAT	2(2)		
	Bacterial Diseases	<i>Burkholderia pseudomallei</i>	CATTLE	5(1)	CATTLE	5(1)
					RABBIT	7(5)
		<i>Coxiella burnetti</i>			CATTLE	1(1)
					GOAT	2(1)
		<i>Cryptococcus neoformans</i>	AVIAN	17(1)		
	Viral Disease	Newcastle Disease	POULTRY	10(4)	POULTRY	10(1)