

SALMONELLA REPORTING

Commencing with the next issue, data on cases of human salmonellosis will be included in the bulletin. In the next issue, all cases received for April and May 1978 will be included.

SURVEY OF VIETNAMESE REFUGEES

Ninety-six of the hepatitis B reports from IMVS in this issue come from a continuing survey of Vietnamese refugees in South Australia on behalf of the S.A. Health Commission.

In addition, polio viruses I, II and III were detected in 7 refugees. Although these have been included under these headings, it is believed that they are vaccinal strains, since each individual involved was immunized with live oral vaccine on arrival.

FATAL HERPES ENCEPHALITIS (contributed by the staff of the Virology Section, State Health Laboratory, Brisbane)

Herpes simplex virus was isolated from the brain of an 11 year old girl with encephalitis. Three weeks before death, she was observed to have had a lesion under her nostril which appeared to heal. Ten days before death, she was treated for a coryza type illness. She was subsequently admitted to hospital with encephalitis, and rapidly deteriorated.

PENICILLIN RESISTANT GONOCOCCI

A further 5 cases of gonorrhoea with a β -lactamase producing strain of N. gonorrhoeae have been reported from N.S.W. These occurred between February and April 1978 with 4 cases being detected in Sydney and the other in Newcastle.

Four of the cases were attributed to female contacts in Manila whilst the other was believed to have resulted from a male contact in Sydney.

The total number of cases recorded in Australia now stands at 59.

BETA-LACTAMASE PRODUCING HAEMOPHILUS INFLUENZAE (contributed by Dr H. Ghosh, The Royal Newcastle Hospital)

A 2 year old child was put on amoxycillin by the family doctor for ear ache and drowsiness. She seemed to be improving, but

on the eighth day developed acute ear ache, drowsiness, irritability and neck stiffness. On hospitalisation for 'otitis media and meningitis', the turbid CSF showed many 'haemophilus' on gram stain. Ampicillin 400 mg/kg/d intravenously caused only minor improvement over the next 2 days. The growth from the CSF and blood cultures was confirmed as H. influenzae b, penicillinase positive. On chloramphenicol symptoms resolved in 3 days and she went home 8 days later.

Ampicillin resistance in H. influenzae is plasmid mediated. It is therefore lucky that only single clinical cases have occurred. Rarely chloramphenicol resistance occurs singly or simultaneously. Resistant strains have been rarer in Australia than in Europe and North America. However, this case indicates that strains isolated from life-threatening infections, especially when a penicillin has been recently administered, should be checked for beta-lactamase production. Simple paper-strip methods have been described in the literature and one is available commercially.

PATHOGENICITY OF ESCHERICHIA COLI (contributed by Dr R. Luke,
La Trobe University, Melbourne, by request)

The clinical significance of enteropathogenic strains of *E. coli* is a contentious issue, and attempts to clarify the picture are complicated by problems of diagnosis. For many years, identification of such strains has been based on the assumption that pathogenicity is restricted to certain serotypes; however recent developments in the understanding of the pathogenesis of *E. coli* - induced diarrhoea have resulted in alternative methods of diagnosis. The purpose of the present article is to outline some recent developments in this field to encourage a more critical approach to the identification of pathogenic *E. coli* in Australia.

The initial breakthrough in studies of the pathogenesis of *E. coli*-induced diarrhoea was reported in 1956 by a research team who had previously been first to demonstrate production of an enterotoxin by *Vibrio cholerae*. The toxin was recognized by its ability to induce accumulation of fluid when injected into ligated segments of rabbit ileum, and when the same method was used in a study of *E. coli*, an effect similar to that produced by *V. cholerae* was observed. In 1967, a second, markedly different kind of enterotoxin was shown to be produced by *E. coli* isolated from scouring animals.

It has now been shown that the two types of enterotoxin can be produced by strains of *E. coli* isolated from humans, and that a particular isolate may produce either one or both of these toxins. One, the heat-labile toxin (LT), resembles the enterotoxin produced by *V. cholerae* both antigenically and in its mode of action. Like cholera toxin, LT may be detected by observing morphological changes induced in cells such as Y-1 adrenal cells. The second toxin (known as heat-stable toxin or ST) is small and non-antigenic, and may be detected by means of an *in vivo* assay involving intragastric inoculation of infant mice. Toxin-producing (enterotoxigenic) *E. coli* have, during recent years, been found to be associated with outbreaks of gastroenteritis amongst neonates, episodes of travellers' diarrhoea, and endemic diarrhoea in developing countries.

It is known that the enterotoxins of *E. coli* affect only the small intestine and thus it is thought that for a strain to be able to cause diarrhoea, it should be able to colonize the proximal small intestine. Veterinary research workers have shown that two K antigens (K88 and K99), which occur as proteinaceous filaments on the cell walls of certain strains of *E. coli*, confer on such organisms the ability to adhere to the mucosa of the proximal small intestine in piglets and calves. Such adhesion facilitates colonization. Similar surface filaments, currently termed colonization factor antigen (CFA), have been detected on strains isolated from human diarrhoeic faeces. Results of recent work at La Trobe University suggest that strains producing CFA-like material may have been associated with a recent outbreak of diarrhoea amongst babies in a major Melbourne hospital.

The production of enterotoxins and colonization factors is controlled by plasmids, and characteristics such as toxigenicity are not necessarily stable. It is not uncommon for both toxigenic and non-toxigenic strains of a single serotype to be isolated from a single faecal specimen, and toxigenicity may be lost rapidly during subculture on laboratory media. For this reason, when faecal specimens are being examined for the presence of toxigenic *E. coli*, at least five colonies per specimen should be tested.

In view of the demonstration of "pathogenicity factors" such as those described above, how useful are the classical serotyping procedures for detecting truly pathogenic *E. coli*? This question is currently receiving much attention in a number of centres around the world. On one hand, isolation of strains belonging to classical "enteropathogenic serogroups" from the faeces of patients with infectious diarrhoea continues to

be reported; not all of these strains are toxigenic. On the other hand, it has been found in several recent studies, that the majority of toxigenic strains isolated have not belonged to the classical "enteropathogenic serogroups". Had reliance been placed on serotyping alone in these investigations, most of the toxigenic organisms would not have been recognized. This poor correlation between serotype and toxigenicity probably reflects the promiscuity of enterotoxin plasmids.

In summary it seems, that while serotyping can undoubtedly be of use in epidemiological studies, reliable detection of pathogenic *E.coli* (especially those strains associated with sporadic cases of diarrhoea) requires testing for the presence of pathogenicity factors.

An enteric pathogenicity laboratory has been established at La Trobe University, Melbourne. This enterprise is being supported by the N.H. & M.R. While research into the properties of enterotoxins and colonizing factors continues, a limited diagnostic service is being made available. The test systems being used are also suitable for detecting certain of the enterotoxins produced by organisms other than *E.coli* (e.g., strains of *Klebsiella* and *Aeromonas* have been shown to produce LT- and ST-like enterotoxins). Anyone who would like to have strains tested for ability to produce enterotoxin, is invited to contact either Dr. Richard Luke or Mr. Norbert Ryan at the School of Agriculture, La Trobe University, Bundoora, 3083.

Further Reading

Infection and Immunity (1978) 19 727-736.

New England Journal of Medicine (1976) 294 1299-1305

New England Journal of Medicine (1975) 292 1041-1045

J. Infectious Diseases (1977) 135 275-280

AUSTRALIA - COMMUNICABLE DISEASES INTELLIGENCE

REPORTING PERIOD - 18-5-78 . 31-5-78 BULLETIN NUMBER . 78/11
 VIRAL IDENTIFICATIONS FROM CONTRIBUTING LABORATORIES - CONTINUED

VIRUS OR VIRAL ANTIGEN	ICPMR	RAHC	PHH/	FAIR-	RCH	IMVS	STATE	STATE	TOTAL
	(NSW)/ WVH (ACT)	(NSW)	POW (NSW)	FIELD (VIC)			(VIC)	(QLD)	
1019 ECHOVIRUS TYPE 19.....	-	-	2	-	-	-	-	2	4
1022 ECHOVIRUS TYPE 22.....	1	-	-	-	-	-	1	1	3
1025 ECHOVIRUS TYPE 25.....	-	-	-	-	-	-	-	2	2
1027 ECHOVIRUS TYPE 27.....	1	-	-	-	-	-	-	-	1
1030 ECHOVIRUS TYPE 30.....	-	-	1	3	-	1	2	2	9
1101 POLIOVIRUS TYPE 1.....	-	-	-	-	-	1	-	-	1
1102 POLIOVIRUS TYPE 2.....	-	-	-	-	-	3	1	-	4
1103 POLIOVIRUS TYPE 3.....	1	-	-	-	1	3	-	2	7
1200 MUMPS VIRUS.....	1	2	1	1	2	1	-	1	9
1300 HERPES VIRUS GROUP-NOT TYPED.....	-	-	-	-	-	2	-	5	7
1301 HERPES SIMPLEX VIRUS-NOT TYPED.....	5	-	4	-	1	1	13	-	24
1303 VARICELLA-ZOSTER VIRUS.....	1	-	4	-	-	-	-	-	5
1306 HERPES SIMPLEX TYPE 1.....	2	-	-	6	-	7	-	-	15
1307 HERPES SIMPLEX TYPE 2.....	10	-	-	3	-	15	-	-	28
1401 COXIELLA BURNETI.....	9	-	1	-	-	-	13	-	23
1521 MEASLES VIRUS.....	2	-	2	-	-	-	-	1	5
1532 HEPATITIS B ANTIGEN.....	-	-	19	21	-	15	10	9	74
1533 HEPATITIS B ANTIBODY.....	-	-	-	-	-	95	-	14	109
1541 CHLAMYDIA A - TRIC TYPE.....	-	-	-	-	-	1	-	9	10
1556 CMV - CYTOMEGALOVIRUS.....	-	-	1	2	4	1	4	1	13
1562 REOVIRUS (ALL TYPES).....	-	-	-	-	-	2	-	-	2
1562 CORONAVIRUS.....	-	-	-	-	-	5	-	-	5
1564 ROTAVIRUS.....	-	-	3	8	-	6	-	11	28
1599 ENTEROVIRUS TYPING PENDING.....	-	-	-	-	2	3	4	-	9
TOTAL.....	52	8	61	67	58	183	81	80	590

ROSS RIVER VIRUS	16..	4..	20
MURRAY VALLEY ENCEPHALITIS		2..	2
GROUP A ARBOVIRUS		1..	1
GROUP B ARBOVIRUS		3..	3

AUSTALIA - COMMUNICABLE DISEASES INTELLIGENCE

REPORTING PERIOD - 12-5-78 . 31-5-78 BULLETIN NUMBER . 78/11

VIRAL IDENTIFICATIONS CATEGORISED INTO SOURCE SPECIMENS

VIRUS OR VIRAL ANTIGEN	FA	BL	NA	CS	SK	EY	UR	BR	GE	OT	TOTAL
0100 ADENOVIRUS NOT TYPED.....	5	5	9	-	-	-	-	-	-	-	19
0101 ADENOVIRUS TYPE 1.....	4	-	1	-	-	-	-	-	-	-	5
0102 ADENOVIRUS TYPE 2.....	6	-	2	-	-	-	-	-	-	-	8
0103 ADENOVIRUS TYPE 3.....	1	-	-	-	-	1	-	-	-	-	2
0105 ADENOVIRUS TYPE 5.....	2	-	1	-	-	-	-	-	-	-	3
0106 ADENOVIRUS TYPE 6.....	-	-	-	-	-	1	-	-	-	-	1
0107 ADENOVIRUS TYPE 7.....	4	-	3	-	-	2	-	-	-	-	9
0108 ADENOVIRUS TYPE 8.....	-	-	-	-	-	1	-	-	-	-	1
0119 ADENOVIRUS TYPE 19.....	-	-	-	-	-	2	-	-	-	-	2
0199 ADENOVIRUS TYPING PENDING.....	1	-	7	-	-	1	-	-	-	2	11
0203 INFLUENZA B VIRUS.....	-	1	2	-	-	-	-	-	-	-	3
0302 PARAINFLUENZA VIRUS TYPE 2.....	-	-	4	-	-	-	-	-	-	-	4
0303 PARAINFLUENZA VIRUS TYPE 3.....	-	-	10	-	-	-	-	-	-	-	10
0400 RESPIRATORY SYNCYTIAL VIRUS (RS)...	-	1	23	-	-	-	-	-	-	-	24
(500 RHINOVIRUS (ALL TYPES).....	-	-	24	-	-	-	-	-	-	-	24
0600 MYCOPLASMA PNEUMONIAE.....	-	28	-	-	-	-	-	-	-	-	28
0800 COXSACKIEVIRUSES GROUP A - NOT TYPED.....	1	-	-	-	-	-	-	-	-	-	1
0816 COXSACKIEVIRUS A16.....	-	-	-	-	1	-	-	-	-	-	1
0901 COXSACKIEVIRUS B1.....	2	1	3	-	-	-	-	-	-	-	6
0902 COXSACKIEVIRUS B2.....	-	-	2	1	-	-	-	-	-	-	3
0903 COXSACKIEVIRUS B3.....	-	1	1	1	-	-	-	-	-	-	3
0905 COXSACKIEVIRUS B5.....	1	-	-	1	-	-	-	-	-	1	3
0999 COXSACKIEVIRUS GROUP B TYPING PENDING.....	-	-	-	-	-	-	-	-	-	1	1
1002 ECHOVIRUS TYPE 2.....	-	-	1	-	-	-	-	-	-	-	1
1005 ECHOVIRUS TYPE 5.....	-	-	1	-	-	-	-	-	-	-	1
1006 ECHOVIRUS TYPE 6.....	-	-	1	-	-	-	-	-	-	-	1
1007 ECHOVIRUS TYPE 7.....	2	-	1	1	-	-	-	-	-	-	4
1009 ECHOVIRUS TYPE 9.....	1	-	-	-	-	-	-	-	-	-	1
1014 ECHOVIRUS TYPE 14.....	1	-	1	3	-	-	-	-	-	-	5
1015 ECHOVIRUS TYPE 15.....	1	-	-	-	-	-	-	-	-	-	1
1016 ECHOVIRUS TYPE 16.....	1	-	-	-	-	-	-	-	-	-	1
1017 ECHOVIRUS TYPE 17.....	3	-	2	1	-	-	-	-	-	-	6
1018 ECHOVIRUS TYPE 18.....	-	-	1	2	-	-	-	-	-	-	3
1019 ECHOVIRUS TYPE 19.....	3	-	-	1	-	-	-	-	-	-	4

AUSTRALIA - COMMUNICABLE DISEASES INTELLIGENCE

REPORTING PERIOD - 18-5-78 . 31-5-78 BULLETIN NUMBER . 78/11
 VIRAL IDENTIFICATIONS CATEGORISED INTO SOURCE SPECIMENS - CONTINUED

VIRUS OR VIRAL ANTIGEN	EA	BL	NA	CS	SK	EY	UR	BR	GE	OT	TOTAL
1022 ECHOVIRUS TYPE 22.....	1	-	1	1	-	-	1	-	-	-	4
1025 ECHOVIRUS TYPE 25.....	1	-	1	-	-	-	-	-	-	-	2
1027 ECHOVIRUS TYPE 27.....	-	-	-	1	-	-	-	-	-	-	1
1030 ECHOVIRUS TYPE 30.....	3	-	2	4	-	-	-	-	-	-	9
1101 POLIOVIRUS TYPE 1.....	1	-	-	-	-	-	-	-	-	-	1
1102 POLIOVIRUS TYPE 2.....	4	-	-	-	-	-	-	-	-	-	4
1103 POLIOVIRUS TYPE 3.....	6	-	1	-	-	-	-	-	-	-	7
1200 MUMPS VIRUS.....	-	2	3	4	-	-	-	-	-	1	10
1300 HERPES VIRUS GROUP-NOT TYPED.....	-	-	-	-	5	-	-	-	3	-	8
1301 HERPES SIMPLEX VIRUS-NOT TYPED.....	-	4	3	1	6	2	-	-	5	3	24
1303 VARICELLA-ZOSTER VIRUS.....	-	5	-	-	-	-	-	-	-	-	5
1306 HERPES SIMPLEX TYPE 1.....	-	-	6	-	7	1	-	-	1	2	17
1307 HERPES SIMPLEX TYPE 2.....	-	-	-	-	2	-	-	-	25	-	27
1401 COXIELLA BURNETI.....	-	23	-	-	-	-	-	-	-	-	23
1521 MEASLES VIRUS.....	-	5	-	-	-	-	-	-	-	-	5
1532 HEPATITIS B ANTIGEN.....	-	74	-	-	-	-	-	-	-	-	74
1533 HEPATITIS B ANTIBODY.....	-	109	-	-	-	-	-	-	-	-	109
1541 CHLAMYDIA A - TRIC TYPE.....	-	-	-	-	-	2	-	-	8	-	10
1556 CMV - CYTOMEGALOVIRUS.....	-	4	7	-	-	-	2	-	-	-	13
1562 REOVIRUS (ALL TYPES).....	2	-	-	-	-	-	-	-	-	-	2
1562 CORONAVIRUS.....	5	-	-	-	-	-	-	-	-	-	5
1564 ROTAVIRUS.....	28	-	-	-	-	-	-	-	-	-	28
1599 ENTEROVIRUS TYPING PENDING.....	5	-	4	-	-	-	-	-	-	-	9
TOTAL.....	95	263	128	22	21	13	3	-	42	10	597

ROSS RIVER VIRUS	20.....	20
MURRAY VALLEY ENCEPHALITIS	2.....	2
GROUP A ARBOVIRUS	1.....	1
GROUP B ARBOVIRUS	3.....	3

19. 5. '78

LIST B COMMUNICABLE DISEASES AND AGENTS NOTIFIED AFTER HOSPITAL AND LABORATORY DIAGNOSIS

DISEASES	CASES NOTIFIED DURING WEEK								CUMULATIVE TOTAL - year to date*							
	N.S.W.	VIC.	QLD.	S.A.	W.A.	TAS.	A.C.T.	N.T.	N.S.W.	VIC.	QLD.	S.A.	W.A.	TAS.	A.C.T.	N.T.
AMOEBIASIS	N.N.								N.N.	1	2		2			
ANKYLOSTOMIASIS	N.N.								N.N.				3			61
ARBO VIRUS INFECTION			N.N.		N.N.						N.N.		N.N.			
DENGUE					N.N.					1			N.N.			
MURRAY VALLEY ENCEPHALITIS			N.N.	N.N.	N.N.		N.N.				N.N.	N.N.	N.N.		N.N.	
OTHER (STATE TYPE)				N.N.	N.N.		N.N.					N.N.	N.N.		N.N.	
HYDATID									2	1		1				
MALARIA			5		1				24	17	36	5	13		7	1
ORNITHOSIS (PSITTACOSIS, etc)																
Q. FEVER			6				N.N.		11	7	128	10			N.N.	
SALMONELLA (LABORATORY ISOLATES)	20	7	1	3	3	3		4	639	76	58	162	104	18	15	49
SHIGELLA (LABORATORY ISOLATES)	N.N.		2					14	N.N.		40	13			1	94

N.N. - NOT NOTIFIABLE

* - INCLUDES ADJUSTMENTS FOR REVISED DIAGNOSIS OR OTHER AMENDMENT.

QLD. (+) - MONTHLY NOTIFICATION OF GONORRHOEA AND SYPHILIS.

Director-General of Health

12. 5. '78

LIST B COMMUNICABLE DISEASES AND AGENTS NOTIFIED AFTER HOSPITAL AND LABORATORY DIAGNOSIS

DISEASES	CASES NOTIFIED DURING WEEK								CUMULATIVE TOTAL - year to date*							
	N.S.W.	VIC.	QLD.	S.A.	W.A.	TAS.	A.C.T.	N.T.	N.S.W.	VIC.	QLD.	S.A.	W.A.	TAS.	A.C.T.	N.T.
AMOEBIASIS	N.N.								N.N.	1	2		2			
ANKYLOSTOMIASIS	N.N.								N.N.				3			61
ARBO VIRUS INFECTION			N.N.		N.N.						N.N.		N.N.			
DENGUE					N.N.					1			N.N.			
MURRAY VALLEY ENCEPHALITIS			N.N.	N.N.	N.N.		N.N.				N.N.	N.N.	N.N.		N.N.	
OTHER (STATE TYPE)				N.N.	N.N.		N.N.					N.N.	N.N.		N.N.	
HYDATID									2	1		1				
MALARIA	1		1		1				24	17	31	5	* 12		7	1
ORNITHOSIS (PSITTACOSIS, etc)																
Q. FEVER			1				N.N.		11	7	122	10			N.N.	
SALMONELLA (LABORATORY ISOLATES)	57	2		12	8	1			619	69	57	159	101	15	14	45
SHIGELLA (LABORATORY ISOLATES)	N.N.			2				3	N.N.		38	13			1	80

N.N. - NOT NOTIFIABLE

* - INCLUDES ADJUSTMENTS FOR REVISED DIAGNOSIS OR OTHER AMENDMENT.

QLD. (+) - MONTHLY NOTIFICATION OF GONORRHOEA AND SYPHILIS.

Director-General of Health

5. 5. '78

LIST B COMMUNICABLE DISEASES AND AGENTS NOTIFIED AFTER HOSPITAL AND LABORATORY DIAGNOSIS

DISEASES	CASES NOTIFIED DURING WEEK								CUMULATIVE TOTAL - year to date*							
	N.S.W.	VIC.	QLD.	S.A.	W.A.	TAS.	A.C.T.	N.T.	N.S.W.	VIC.	QLD.	S.A.	W.A.	TAS.	A.C.T.	N.T.
AMOEBIASIS	N.N.								N.N.	1	2		2			
ANKYLOSTOMIASIS	N.N.								N.N.				3			61
ARBO VIRUS INFECTION			N.N.		N.N.						N.N.		N.N.			
DENGUE					N.N.					1			N.N.			
MURRAY VALLEY ENCEPHALITIS			N.N.	N.N.	N.N.		N.N.				N.N.	N.N.	N.N.		N.N.	
OTHER (STATE TYPE)				N.N.	N.N.		N.N.					N.N.	N.N.		N.N.	
HYDATID									2	1		1				
MALARIA	3		5		1				23	17	30	5	12		7	1
ORNITHOSIS (PSITTACOSIS, etc)																
Q. FEVER	1						N.N.		11	7	121	10			N.N.	
SALMONELLA (LABORATORY ISOLATES)	27	5	2	13	6			4	562	67	57	147	93	14	14	45
SHIGELLA (LABORATORY ISOLATES)	N.N.			3				5	N.N.		38	11			1	77

N.N. - NOT NOTIFIABLE

* - INCLUDES ADJUSTMENTS FOR REVISED DIAGNOSIS OR OTHER AMENDMENT.

QLD. (+) - MONTHLY NOTIFICATION OF GONORRHOEA AND SYPHILIS.

N.B. Notifications by Queensland for Gonorrhoea and Syphilis are for the month of April.

Director-General of Health

28. 4. '78

LIST B COMMUNICABLE DISEASES AND AGENTS NOTIFIED AFTER HOSPITAL AND LABORATORY DIAGNOSIS

DISEASES	CASES NOTIFIED DURING WEEK								CUMULATIVE TOTAL - year to date*							
	N.S.W.	VIC.	QLD.	S.A.	W.A.	TAS.	A.C.T.	N.T.	N.S.W.	VIC.	QLD.	S.A.	W.A.	TAS.	A.C.T.	N.T.
AMOEBIASIS	N.N.								N.N.	1	2		2			
ANKYLOSTOMIASIS	N.N.								N.N.				3			61
ARBO VIRUS INFECTION			N.N.		N.N.						N.N.		N.N.			
DENGUE					N.N.					1			N.N.			
MURRAY VALLEY ENCEPHALITIS			N.N.	N.N.	N.N.		N.N.				N.N.	N.N.	N.N.		N.N.	
OTHER (STATE TYPE)				N.N.	N.N.		N.N.					N.N.	N.N.		N.N.	
HYDATID									2	1		1				
MALARIA	5	1	2						20	17	25	5	11		7	1
ORNITHOSIS (PSITTACOSIS, etc)																
Q. FEVER	1		21				N.N.		10	7	121	10			N.N.	
SALMONELLA (LABORATORY ISOLATES)	22	3	2	4	4	2	1	2	535	62	55	134	87	14	14	41
SHIGELLA (LABORATORY ISOLATES)	N.N.		1						3	N.N.	38	8			1	72

N.N. - NOT NOTIFIABLE

* - INCLUDES ADJUSTMENTS FOR REVISED DIAGNOSIS OR OTHER AMENDMENT.

QLD. (+) - MONTHLY NOTIFICATION OF GONORRHOEA AND SYPHILIS.

Director-General of Health