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From the Director's desk

The major article in this issue of Disease Watch is a review of notifiable diseases in 2009. Also in this issue are updates on the investigation into adverse events in young children associated with one brand of influenza vaccine and the current outbreak of measles in Perth, and information relating to the release of updated guidelines on management of sexually transmitted diseases in WA, commonly known as the 'Silver Book'.

Please note that plans are underway to change the distribution method for Disease Watch to an electronic format. More on this in later issues.

Dr. Paul Armstrong, June 2010

Guidelines for managing STIs – now available online

WA Health's *Guidelines for Managing Sexually Transmitted Infections*, also known as the "Silver Book", have been updated, following statewide consultation. The guidelines are available online and feature an easy to navigate interface, regularly updated information and a range of patient and health professional resources.

To view the guidelines or to provide feedback, please go to: http://silverbook.health.wa.gov.au

A hard copy of the updated guidelines is also being produced and will include an updated *WA Endemic Regions STI/HIV Control Supplement* for the Kimberley, Pilbara and Goldfields regions.

The Communicable Disease Control Directorate would like to thank all the health care providers who have participated in the development of the guidelines.

For further information, please contact Sue Laing, Sexual Health and Blood-borne Virus Program (Email: susan.laing@health.wa.gov.au)

Suspension of Influenza vaccination for children less than five years

- Influenza vaccination for children less than 5 years of age without medical risk factors continues to be suspended, as recommended by the Commonwealth Chief Medical Officer on 1 June 2010.
- The investigation by the Therapeutic Goods Administration ongoing; to date they have not identified any factors that could explain the higher than expected rates of fever with convulsions in children less than five years of age following administration of 2010 seasonal influenza vaccine.
- While influenza vaccinations for healthy children less than five years of age have been suspended until further notice, children under the age of five with medical risk factors for severe influenza illness should be encouraged to be vaccinated if, in the opinion of their provider, the benefits of influenza vaccine outweigh the potential risks.
- For the remainder of this year, the Department of Health recommends using Solvay or sanofi pasteur formulations of the 2010 seasonal influenza vaccine when vaccinating children less than five years of age.
- Panvax® vaccine, which is specific for the 2009 swine flu strain, is still freely available and is an option for those parents who do not wish to have seasonal influenza vaccine.
- Reporting potential adverse events following administration of medicines, including vaccines can be done online at: www.tga.gov.au/adr/bluecard.htm

Update on Perth measles outbreak

- Following our recent media alert on 8 June 2010 advising GPs of three confirmed measles cases in Perth, two additional measles infections have been confirmed within the metropolitan area. Both recent infections occurred among health care workers believed to be exposed at Royal Perth Hospital. Public health follow up of contacts is ongoing.
- Clinicians can access detailed information regarding measles, including exposure management guidelines at www.public.health.wa.gov.au/3/336/3/measles.pm

Disease WAtch is the newsletter of the Communicable Disease Control Directorate.
To subscribe or contribute, contact the editor, Andy Parnell, at cdc@health.wa.gov.au or 9222 6424.

Review of notifiable diseases 2009

In 2009, there was a record 26,930 communicable disease notifications in WA, 25% more than in 2008. The increase was mostly attributed to the influenza A (H1N1) pandemic that occurred during the winter months. There were also increased notifications of campylobacteriosis, pertussis and salmonellosis relative to recent years, and a continuing increase in notifications of genital chlamydia and varicella-zoster infections.

The most frequently notified diseases in 2009 were genital chlamydia (8,881 cases), influenza (5,575 cases), campylobacteriosis (2,597 cases) and varicella-zoster infection (1,736 cases).

Vaccine-preventable diseases

The number of **measles** notifications remains low, with the exception of an outbreak in 2006, mostly among unvaccinated children associated with a visiting spiritual group. The majority of cases continue to be imported into Western Australia. Of the ten measles cases notified in 2009, nine cases were acquired overseas (New Zealand x 2, United Kingdom x 2, Vietnam x 2, Thailand x 1, Indonesia x 1), including one case which was acquired after exposure to two infectious siblings during an air flight from Dubai to Perth. The single locally acquired case was a sibling of an imported case; no other secondary cases were identified. The median age was 21 years (range: 9 months – 56 years) and apart from one adult, all were unvaccinated for measles.

The number of **rubella** cases also remained low with five notifications in 2009, of which two were acquired in Malaysia.

Mumps activity declined to baseline levels (20 cases), after a sustained outbreak during 2007 and 2008, predominantly among teenage and young adult Aboriginal people in the Kimberley region. Cases were evenly distributed across all age groups (range: 6 – 88 years) and the majority resided in the metropolitan region. Five cases reported being fully vaccinated for mumps.

There were four ***Haemophilus influenzae type B*** cases; all were Aboriginal people from the remote regions (Kimberley x3, Pilbara x1). Three cases were babies less than one year old (range: 3 – 5 months) and one case was 17 years old. Two of the babies had been partially immunised while the third baby and the adolescent had no history of immunisation.

The number of **invasive pneumococcal disease** notifications decreased from 161 cases in 2008 to 149 cases in 2009, but was still higher compared to 2005 to 2007. The recent increases have been attributed to an increase in disease caused by non-vaccine serotypes. In 2009, 30 children under 5 years (20% of cases) were notified. Of these, only one case was caused by a serotype included in Prevenar, the current seven valent conjugate vaccine. There were six deaths among adults.

Influenza activity in 2010 was dominated by the pandemic (H1N1) 2009 virus. Notifications peaked in mid-July and declined to near baseline levels by the end of October. Of 5,575 **influenza** notifications for the year, typing data were available for 5,067 cases (91%). Of these, the vast majority (4,592 cases, 91%) were caused by the novel type A p**andemic (H1N1) 2009** influenza virus, with 475 cases (9%) caused by **seasonal influenza** viruses, comprising mostly type A H3N2 (309 cases, 65%); H1N1 (102 cases, 21%) and a few type B viruses (64 cases, 13%). For both pandemic influenza and seasonal influenza, females just outnumbered males (ratio =1.1). Pandemic influenza cases were younger than the seasonal influenza cases (median age: 24 vs 37 years, respectively).

Notification rates for pandemic influenza were between 130 to 210 cases per 100,000 population in most regions of the state, compared to rates of between 10 to 23 cases per 100,000 population for seasonal influenza. The exception was the Kimberley region where rates of both pandemic and seasonal influenza were up to 4 and 7 times higher, respectively compared to the other regions. This may

Table 1. Number of notifications in WA by year, 2005 to 2009.

Disease category/Disease	Year (population)				
	2005	2006	2007	2008	2009
Population	***(n=2,017,088)***	***(n=2,059,381)***	***(n=2,106,119)***	***(n=2,138,491)***	***(n=2,180,946)***
Enteric diseases					
Campylobacteriosis	2450	1949	2102	1836	2597
Cholera	1	0	0	2	0
Cryptosporidiosis	183	251	611	164	235
Hepatitis A	54	71	21	22	35
Hepatitis E	2	1	0	6	5
Listeriosis	4	13	2	8	15
Paratyphoid fever	4	1	3	3	5
Rotavirus	NN	235	724	425	419
Salmonellosis	798	798	985	852	1123
Shigellosis	155	129	102	169	122
Shiga/Vero-toxin producing *E. coli*	12	3	2	0	6
Typhoid fever	8	11	9	8	8
Vibrio parahaemolyticus	0	3	9	7	9
Yersiniosis	2	3	5	7	3
Vaccine preventable diseases					
Haemophilus influenzae type B	2	0	2	0	4
Influenza	465	213	1038	1018	5575
Measles	1	30	1	8	10
Mumps	22	17	109	95	20
Pertussis	525	269	134	468	784
Pneumococcal infection	140	134	132	161	149
Rubella	6	2	3	7	5
Tetanus	0	0	0	1	0
Varicella (chicken pox)	NN	248	323	356	319
Varicella (shingles)	NN	166	386	517	542
Varicella (unspecified)	NN	198	659	757	875
Vector-borne diseases					
Arboviral encephalitis	0	3	0	1	2
Barmah Forest virus	84	185	136	177	154
Chikungunya virus infection	NN	NN	NN	2	10
Dengue fever	19	16	54	98	134
Malaria	85	120	85	85	84
Ross River virus	311	881	599	884	854
Schistosomiasis	403	272	357	337	271
Typhus (Rickettsial infection)	10	21	7	19	24
Zoonotic diseases					
Brucellosis	0	1	1	0	1
Leptospirosis	5	3	5	1	1
Psittacosis	4	4	3	6	2
Q fever	6	5	7	6	2
Blood-borne viral diseases					
Hepatitis B (newly acquired)	34	50	42	48	39
Hepatitis B (unspecified)*	375	552	576	705	699
Hepatitis C (newly acquired)	107	110	82	102	94
Hepatitis C (unspecified)*	954	1010	1163	1265	1067
Hepatitis D	2	1	4	6	0
Sexually transmissible infections					
Chancroid (soft sore)	1	0	0	0	2
Chlamydia (genital)	5445	6141	7750	8658	8881
Donovanosis	2	0	0	0	0
Gonorrhoea	1576	1675	1761	1696	1347

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	2005	2006	2007	2008	2009
Population	***(n=2,017,088)***	***(n=2,059,381)***	***(n=2,106,119)***	***(n=2,138,491)***	***(n=2,180,946)***
Human immunodeficiency virus	64	72	75	76	89
Syphilis (infectious)	19	50	103	177	88
Syphilis (non-infectious)*	186	140	128	110	109
Other diseases					
Acute rheumatic fever*	NN	NN	NN	6	4
Haemolytic Uraemic Syndrome	1	0	0	0	0
Creutzfeldt-Jakob disease*	1	1	2	7	3
Legionellosis	71	92	82	73	51
Leprosy*	3	3	2	2	2
Melioidosis	1	5	4	6	7
Meningococcal infection	47	21	20	24	28
Tuberculosis*	61	113	60	96	109
Total	**14,648**	**16,221**	**20,396**	**21,491**	**26,930**

represent, at least in part, increased testing in Aboriginal communities.

The proportion of laboratory confirmed cases that were hospitalised was similar for both seasonal and pandemic influenza cases (175 (18%) and 856 (19%) hospitalisations, respectively). There were 27 deaths (0.6% of notifications) associated with pandemic influenza and 3 deaths with seasonal influenza (0.3% of notifications).

For more detailed information on the epidemiology pandemic (H1N1) 2009 influenza in WA, see Disease Watch, December 2009.

Pertussis notifications increased for the third consecutive year with 784 cases in 2009, of which 30% were less than 15 years old. A two month old unvaccinated baby died with pertussis infection. Rates were highest in the Great Southern region.

Varicella-zoster notifications increased from 1,630 in 2008 to 1,736 in 2009 and comprised 18% chickenpox, 31% shingles and 50% unspecified laboratory-confirmed cases.

Vector-borne diseases

There were ten **Chikungunya virus** notifications in 2009. All infections were acquired in South-East Asian countries (India, Malaysia, Singapore and Thailand) where outbreaks have recently been reported.

Two **Murray Valley encephalitis** cases were notified; one in an Aboriginal child from the Kimberley region and the other in a non-Aboriginal adult from the Pilbara region. Both cases survived, but have long term neurological deficits as a result of their infections.

Notifications of both **Ross River virus** and **Barmah Forest virus** decreased marginally compared to 2008. The Pilbara and Kimberley regions again recorded the highest notification rates for both these viruses.

The number of **dengue fever** notifications increased for a third year in a row, from 98 cases in 2008 to 134 cases in 2009. All infections were acquired overseas, mainly in South-East Asia, with almost two-thirds of cases (63%) acquired in Bali.

Schistosomiasis notifications decreased to 271 cases in 2009, however they are still elevated compared to the period prior to 2005 (~ 80 cases/year), reflecting increased migration under humanitarian programs in recent years, mostly from African and Asian countries. Only 15 cases in 2009 were Australian-born, most of whom had acquired their infections in Africa.

Zoonotic diseases

Notifications for brucellosis, leptospirosis, psittacosis and Q fever continue to be very low.

The single case of **brucellosis** was acquired in Kenya after drinking camel milk and the single case of **leptospirosis** was acquired in Laos. Both cases of **psittacosis** had a history of handling sick birds in the metropolitan and south-west regions respectively. Of the two cases of **Q fever**, one was a shearer and the other was an abattoir worker.

Blood-borne viral diseases

There were 39 "newly acquired" **hepatitis B** notifications in 2009, almost 20% less than the 48 cases notified in 2008. The majority of cases (97%) were non-Aboriginal people and the male to female ratio was 2.5:1.
The number of "unspecified" hepatitis B notifications remained stable in 2009, after a steady upward trend from 2005 to 2008 which partly reflected the inclusion of a backlog of delayed laboratory disease notifications and also an increase in overseas migrants to Western Australia. The Kimberley region had the highest notification rate of "unspecified" hepatitis B – almost seven times higher compared to the metropolitan regions.

The number of "newly acquired" **hepatitis C** cases remained stable at 94 cases.
The male to female ratio was 2.4:1 and 27% of cases were Aboriginal people. As with the "unspecified" hepatitis B notifications, the number of "unspecified" hepatitis C notifications also increased from 2005 to 2008, partly as a result of the inclusion of a backlog of delayed laboratory cases. However, "unspecified" hepatitis C notifications declined to 1,067 cases in 2009, a level similar to 2007. "Unspecified" hepatitis C notification rates were highest in the Kimberley region and were double that of the metropolitan region.

Sexually transmissible infections

The increasing trend in **genital chlamydia** notifications continued, although the increase was small (2.5%) in 2009 compared to previous years. The increases have been attributed to more testing, inclusion of laboratory notifications and a real increase in infections. In 2009, 65% of notified cases were aged 15 to 24 years and there were more females than males (ratio 1.4:1).

There was a further decline in **gonorrhoea** notifications in 2009 suggesting a true decrease in the incidence of infections. About half the notified cases (52%) were aged 15 to 24 years and males outnumbered females (ratio 1.4:1). Notification rates for both chlamydia and gonorrhoea were highest in the remote regions, particularly in the Kimberley region.

After a nine-fold increase in **infectious syphilis** notifications over the period 2005 to 2008 (from 19 to 177 cases, respectively), the number dropped sharply to 88 cases in 2009. Decreases were most evident among men who have sex with men from the Perth metropolitan region and among Aboriginal people from the Pilbara region. Almost 40% of infectious syphilis cases were Aboriginal people. The downward trend in the number of non-infectious syphilis notifications stabilised in 2009 with 109 cases, of which 32% were Aboriginal people. Notification rates for both infectious and **non-infectious syphilis** were many times higher in the Kimberley region compared to the other regions in WA.

The two cases of ***Haemophilus ducreyi*** (chancroid) were both acquired overseas (Asia and Africa).

The number of **human immunodeficiency virus (HIV)** notifications increased again in 2009 with 89 cases, 13 (17%) cases more than in 2008. The majority of cases were male (75%) and the median age of notified cases was 37 years (range: 4 – 55 years); three cases were Aboriginal people. Most cases (92%) reported sexual contact as the most likely route of transmission; 37% were men who had sex with men, 31% were heterosexual men, 24% were heterosexual women and 8% reported other or unknown exposures.

Other diseases

Acute rheumatic fever notifications remained low with four notifications in 2009.

The median age was 10 years (range: 5 – 14 years). All were Aboriginal people who lived in the remote areas of the state (Pilbara 2; Kimberley 1; Goldfields 1).

Notes on tables 1 and 2.

1. Data extracted from the WA Notifiable Diseases Database (WANIDD) on 29th March 2010.

2. All data analysed on basis of the earliest available date reflecting date of onset of disease ("optimal date of onset" in WANIDD), with the exception of diseases marked with " * ", which were analysed by date of receipt of notification.

3. Data for methicillin resistant Staphylococcus aureus (MRSA) are not shown, as these are better subject to laboratory surveillance, and a high proportion of cases are detected by screening and represent carriage rather than disease.

4. Rate = crude rate per 100,000 population. Rates were calculated using the Rates Calculator Version 9.5.1 (Department of Health, Western Australia)

5. "Total" in Table 2 includes cases with interstate or overseas residential addresses, or where no postcode was specified.

6. NN = not notifiable

Table 2. Number and rate of notifications in WA by region, 2009.

Disease Category/Disease	North Metropolitan		South Metropolitan		Central		Goldfields	
Population	*(n=904,819)*		*(n=790,318)*		*(n=73,988)*		*(n=56,799)*	
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Enteric diseases								
Campylobacteriosis	1113	123.0	915	115.8	80	108.1	62	109.2
Cholera	0	0.0	0	0.0	0	0.0	0	0.0
Cryptosporidiosis	43	4.8	53	6.7	8	10.8	7	12.3
Hepatitis A	12	1.3	15	1.9	0	0.0	0	0.0
Hepatitis E	3	0.3	2	0.3	0	0.0	0	0.0
Listeriosis	4	0.4	7	0.9	3	4.1	0	0.0
Paratyphoid fever	2	0.2	3	0.4	0	0.0	0	0.0
Rotavirus	221	24.4	131	16.6	3	4.1	7	12.3
Salmonellosis	433	47.9	354	44.8	28	37.8	17	29.9
Shigellosis	23	2.5	15	1.9	2	2.7	6	10.6
Shiga/Vero-toxin producing *E. coli*	1	0.1	2	0.3	1	1.4	0	0.0
Typhoid fever	1	0.1	6	0.8	0	0.0	0	0.0
Vibrio parahaemolyticus	6	0.7	1	0.1	0	0.0	0	0.0
Yersiniosis	1	0.1	2	0.3	0	0.0	0	0.0
Vaccine preventable diseases								
Haemophilus influenzae type B	0	0.0	0	0.0	0	0.0	0	0.0
Influenza	2261	249.9	1902	240.7	177	239.2	147	258.8
Measles	5	0.6	3	0.4	1	1.4	0	0.0
Mumps	9	1.0	6	0.8	0	0.0	0	0.0
Pertussis	279	30.8	307	38.8	4	5.4	31	54.6
Pneumococcal infection	52	5.7	49	6.2	3	4.1	13	22.9
Rubella	4	0.4	1	0.1	0	0.0	0	0.0
Tetanus	0	0.0	0	0.0	0	0.0	0	0.0
Varicella (chicken pox)	125	13.8	109	13.8	15	20.3	19	33.5
Varicella (shingles)	201	22.2	225	28.5	14	18.9	4	7.0
Varicella (unspecified)	392	43.3	304	38.5	22	29.7	1	1.8
Vector-borne diseases								
Arboviral encephalitis	0	0.0	0	0.0	0	0.0	0	0.0
Barmah Forest virus	17	1.9	60	7.6	1	1.4	4	7.0
Chikungunya virus infection	5	0.6	4	0.5	0	0.0	0	0.0
Dengue fever	56	6.2	50	6.3	6	8.1	2	3.5
Malaria	40	4.4	34	4.3	1	1.4	4	7.0
Ross River virus	186	20.6	251	31.8	37	50.0	28	49.3
Schistosomiasis	180	19.9	75	9.5	4	5.4	2	3.5
Typhus (Rickettsial infection)	8	0.9	5	0.6	1	1.4	1	1.8
Zoonotic diseases								
Brucellosis	1	0.1	0	0.0	0	0.0	0	0.0
Leptospirosis	0	0.0	1	0.1	0	0.0	0	0.0
Psittacosis	0	0.0	1	0.1	0	0.0	0	0.0
Q fever	0	0.0	0	0.0	1	1.4	0	0.0
Blood-borne viral diseases								
Hepatitis B (newly acquired)	16	1.8	21	2.7	0	0.0	1	1.8
Hepatitis B (unspecified)*	294	32.5	248	31.4	3	4.1	27	47.5
Hepatitis C (newly acquired)	42	4.6	29	3.7	2	2.7	5	8.8
Hepatitis C (unspecified)*	364	40.2	397	50.2	23	31.1	34	59.9
Hepatitis D	0	0.0	0	0.0	0	0.0	0	0.0
Sexually transmissible infections								
Chancroid (soft sore)	2	0.2	0	0.0	0	0.0	0	0.0
Chlamydia (genital)	3365	371.9	3075	389.1	163	220.3	388	683.1
Donovanosis	0	0.0	0	0.0	0	0.0	0	0.0
Gonorrhoea	238	26.3	191	24.2	12	16.2	164	288.7
Syphilis (infectious)	29	3.2	18	2.3	1	1.4	4	7.0
Syphilis (non-infectious)*	36	4.0	33	4.2	0	0.0	5	8.8
Other diseases								
Acute rheumatic fever*	0	0.0	0	0.0	0	0.0	1	1.8
Creutzfeldt-Jakob disease*	1	0.1	0	0.0	0	0.0	0	0.0
Haemolytic Uraemic Syndrome	0	0.0	0	0.0	0	0.0	0	0.0
Legionellosis	30	3.3	10	1.3	2	2.7	1	1.8
Leprosy*	1	0.1	0	0.0	0	0.0	0	0.0
Melioidosis	2	0.2	1	0.1	0	0.0	1	1.8
Meningococcal infection	7	0.8	12	1.5	1	1.4	2	3.5
Tuberculosis*	55	6.1	39	4.9	2	2.7	1	1.8
TOTAL	**10,164**	**1123.3**	**8,967**	**1134.6**	**621**	**839.3**	**989**	**1741.2**

N.B. total excludes notifications where the patient's postcode is unknown or outside WA and also excludes HIV

Region	Great Southern		Kimberley		Midwest		Pilbara		Southwest		Total	
	(n=57,273)		(n=33,230)		(n=62,771)		(n=47,028)		(n=154,460)		(n=2,180,686)	
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
	66	115.2	40	120.4	51	81.2	46	97.8	195	126.2	**2597**	**119.1**
	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	**0**	**0.0**
	8	14.0	46	138.4	18	28.7	20	42.5	28	18.1	**235**	**10.8**
	6	10.5	0	0.0	0	0.0	1	2.1	1	0.6	**35**	**1.6**
	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	**5**	**0.2**
	0	0.0	0	0.0	0	0.0	0	0.0	1	0.6	**15**	**0.7**
	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	**5**	**0.2**
	4	7.0	12	36.1	2	3.2	14	29.8	20	12.9	**419**	**19.2**
	13	22.7	105	316.0	35	55.8	60	127.6	65	42.1	**1123**	**51.5**
	1	1.7	46	138.4	10	15.9	9	19.1	7	4.5	**122**	**5.6**
	1	1.7	0	0.0	0	0.0	0	0.0	1	0.6	**6**	**0.3**
	0	0.0	0	0.0	0	0.0	0	0.0	1	0.6	**8**	**0.4**
	0	0.0	0	0.0	0	0.0	0	0.0	1	0.6	**9**	**0.4**
	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	**3**	**0.1**
	0	0.0	3	9.0	0	0.0	1	2.1	0	0.0	**4**	**0.2**
	129	225.2	252	758.4	120	191.2	251	533.7	269	174.2	**5575**	**255.7**
	0	0.0	1	3.0	0	0.0	0	0.0	0	0.0	**10**	**0.5**
	1	1.7	1	3.0	0	0.0	1	2.1	2	1.3	**20**	**0.9**
	43	75.1	19	57.2	9	14.3	23	48.9	63	40.8	**784**	**36.0**
	5	8.7	9	27.1	3	4.8	11	23.4	3	1.9	**149**	**6.8**
	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	**5**	**0.2**
	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	**0**	**0.0**
	4	7.0	3	9.0	9	14.3	2	4.3	32	20.7	**319**	**14.6**
	9	15.7	3	9.0	5	8.0	6	12.8	71	46.0	**542**	**24.9**
	22	38.4	34	102.3	20	31.9	26	55.3	41	26.5	**875**	**40.1**
	0	0.0	1	3.0	0	0.0	1	2.1	0	0.0	**2**	**0.1**
	9	15.7	16	48.1	1	1.6	30	63.8	16	10.4	**154**	**7.1**
	0	0.0	0	0.0	1	1.6	0	0.0	0	0.0	**10**	**0.5**
	3	5.2	4	12.0	4	6.4	3	6.4	2	1.3	**134**	**6.1**
	0	0.0	0	0.0	0	0.0	2	4.3	1	0.6	**84**	**3.9**
	40	69.8	83	249.8	26	41.4	94	199.9	105	68.0	**854**	**39.2**
	1	1.7	4	12.0	1	1.6	1	2.1	1	0.6	**271**	**12.4**
	4	7.0	1	3.0	0	0.0	1	2.1	3	1.9	**24**	**1.1**
	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	**1**	**0.0**
	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	**1**	**0.0**
	0	0.0	0	0.0	0	0.0	0	0.0	1	0.6	**2**	**0.1**
	0	0.0	0	0.0	1	1.6	0	0.0	0	0.0	**2**	**0.1**
	0	0.0	0	0.0	0	0.0	0	0.0	1	0.6	**39**	**1.8**
	6	10.5	71	213.7	9	14.3	11	23.4	18	11.7	**699**	**32.1**
	6	10.5	1	3.0	3	4.8	2	4.3	4	2.6	**94**	**4.3**
	28	48.9	31	93.3	45	71.7	24	51.0	77	49.9	**1067**	**48.9**
	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	**0**	**0.0**
	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	**2**	**0.1**
	154	268.9	577	1736.4	335	533.7	306	650.7	436	282.3	**8881**	**407.3**
	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	**0**	**0.0**
	2	3.5	471	1417.4	32	51.0	191	406.1	27	17.5	**1347**	**61.8**
	0	0.0	26	78.2	0	0.0	9	19.1	0	0.0	**88**	**4.0**
	0	0.0	31	93.3	1	1.6	1	2.1	1	0.6	**109**	**5.0**
	0	0.0	1	3.0	0	0.0	2	4.3	0	0.0	**4**	**0.2**
	0	0.0	0	0.0	0	0.0	0	0.0	2	1.3	**3**	**0.1**
	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	**0**	**0.0**
	1	1.7	1	3.0	0	0.0	2	4.3	4	2.6	**51**	**2.3**
	0	0.0	1	3.0	0	0.0	0	0.0	0	0.0	**0**	**0.0**
	0	0.0	2	6.0	0	0.0	1	2.1	0	0.0	**7**	**0.3**
	0	0.0	2	6.0	1	1.6	2	4.3	1	0.6	**28**	**1.3**
	1	1.7	5	15.0	0	0.0	3	6.4	3	1.9	**109**	**5.0**
	567	**990.0**	**1,902**	**5723.7**	**742**	**1182.1**	**1,157**	**2460.2**	**1,503**	**973.1**	**26,930**	**1234.9**

There were 28 **invasive meningococcal disease** notifications, a small increase on the historically low numbers of 2007 and 2008, but still less than a third of the 86 cases notified in 2000. The majority of cases were serogroup B (24 cases, 86%); there were two serogroup C cases (the first time this serogroup had been notified since 2005), one serogroup Y and one untypeable case. Of the cases notified in 2009, 13 (46%) were less than five years old. There was one death, as a result of serogroup B infection, reported in an elderly adult.

The number of **legionellosis** notifications decreased for the forth consecutive year to 51 cases. The majority (86%) of cases continued to be due to *Legionella longbeachae*, the type associated with exposure to potting mix, and there were also seven *L. pneumophila* cases.

There was a small increase in **tuberculosis** notifications in 2009 with 109 cases, of which seven were relapses. The majority of cases were born overseas (the largest proportion in South-East Asia – 34%) and acquired overseas. Seventeen cases were born in Australia and of these, seven were acquired locally.

Seven **meliodosis** cases with an age range of 38 to 62 years were notified in five non-Aboriginal and two Aboriginal people. Most cases lived or worked in remote regions of WA or the Northern Territory, and two cases acquired their infections while travelling in Asia.

Two **leprosy** notifications in the 40 and 54 year age group were reported in an Aboriginal adult from the Kimberley region and an overseas-born non-Aboriginal adult residing in the metropolitan area.

There were three cases of **Creutzfeldt-Jakob disease** notified in older adults (range: 64 – 76 years).

Enteric diseases

The total number of enteric disease notifications in 2009 (4582 cases) was higher than for any of the previous four years, and this was primarily due to increased numbers of notifications for the two most commonly notified enteric infections, *Campylobacter* and *Salmonella*. The number of **Salmonella** notifications in 2009 (1123 cases) was 32% greater than the number of *Salmonella* notifications in 2008, with this increase largely due to greater numbers of *Salmonella* infections associated with travel to Bali. There were nine food-borne or suspected food-borne outbreaks caused by *Salmonella* in 2009, with 163 cases connected to these outbreaks. Confirmed or suspected sources of infection were fried ice-cream, Vietnamese pork rolls, pawpaw, raw egg mayonnaise and scrambled eggs. The number of **Listeria** cases in 2009 (15 cases) was also higher than for any of the previous four years, with two cases linked to a common food venue. The majority of infections were among older adults and there was also one neonatal and one intrauterine infection, in a 15 week old foetus. There were three deaths including the foetus. All adult cases had consumed foods considered to be high risk for *Listeria*.

The number of **Hepatitis A** notifications in 2009 (35 cases) was higher than for the previous two years. This increase was associated with two food-borne outbreaks, one caused by frozen berries, and the other by semi-dried tomatoes.

For other enteric infections, the number of notifications was within the expected range based on previous years.

For most of these enteric infections, notification rates in 2009 were higher for Aboriginal as compared to non-Aboriginal people. The greatest difference in rate was for ***Shigella*** infection, with the notification rate for Aboriginal people 38 times that for non-Aboriginal people. Notification rates were highest in the 0 to 4 year age group for all of the major enteric infections, with the exception of hepatitis A infection. Hepatitis A notification rates for young children have been low in WA since the introduction of a vaccination program for Aboriginal infants in 2005. There were large differences in the enteric disease notification rates for the different regions of WA, with the highest rates reported from the Kimberley region.