疫情報導
TAIWAN EPIDEMIOLOGY BULLETIN
July 19, 2016 Vol.32 No.14
Original Article

Prevention and Control of Hepatitis B in Taiwan

Chia-Ling Liu *, Hsiu-Fang Chang, Ji-Jia Huang, Yu-Min Chou

Abstract

Taiwan government initiated the Hepatitis B Control Program in 1982, and a series of five-year programs had been subsequently proposed and enacted. In 2011, Hepatitis B Control Program has been integrated into the Acute Infectious Disease Epidemic Risk Monitoring and Management Plan. The main strategies for Hepatitis B control include maintaining high vaccination rate, increasing hepatitis testing, and extending hepatitis treatment. A nationwide screening of pregnant women and neonate mass immunization program against hepatitis B has been implemented since July 1984. That program significantly reduced mother-to-child transmission of hepatitis B virus in Taiwan. The HBsAg positive rate of children at age six years has declined from 10.5% before the immunization program to 0.8 % in 2007, which has reached the WPRO 2017 goal of hepatitis B prevalence among young children to less than 1%. Nowadays, we still face several challenges to control hepatitis B. Immunization cannot interrupt all vertical transmissions of hepatitis B virus. Among infants born to HBeAg positive mothers, 10% will become chronic carriers of hepatitis B after even receiving immunoprophylaxis. The Hepatitis B vaccination does not provide life-long protection; therefore, vaccinees who had lost protective antibodies but had high risk behaviors may be infected with HBV if exposed. Moreover, there are numerous people living with chronic hepatitis B but unaware of their infection status and may unknowingly spread the virus to others. In addition, treatments for hepatitis B can suppress HBV replication but cannot cure the disease. We expect the above issues could be resolved in the future and look forward to further breakthroughs in hepatitis B control.

Keywords: Hepatitis B control, Hepatitis B vaccine

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Received：Jul. 1, 2015
Accepted：Sep. 9, 2015
DOI：10.6525/TEB.20160719.32(14).001

Gastroenteritis Outbreak in Tour Groups, Lyudao, 2015

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Abstract

In May and June 2015, four and seven diarrhea outbreaks among tour groups traveling to Lyudao Township were reported. A common source for these outbreaks was suspected because of a single epidemic peak observed in every outbreak. Norovirus was detected in the samples both from patients' stool and oysters provided by restaurant A. Judged from the norovirus incubation period, all patients had food provided by restaurant A. The temporal evidence also suggested the contaminated oysters in restaurant A caused the outbreaks. Further sequencing analysis showed that the norovirus detected from patients and oysters belonged to the same group and confirmed the assumption. This is not the first time that oysters imported from Korea caused gastroenteritis outbreaks. Similar outbreak had occurred once in relation to one famous buffet restaurant in 2012. To decrease the risk of outbreak, relevant authorities should strengthen the regulation for importation of oysters, evaluate the high-risk place of origin, and enhance associated training and on-job education for the food and beverage industry.

Keywords: Norovirus, Diarrhea outbreak

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Received：Feb. 26, 2016
Accepted：Apr. 28, 2016
DOI：10.6525/TEB.20160719.32(14).002

week 26–27 (Jun. 26–Jul. 9, 2016)

DOI: 10.6525/TEB.20160719.32(14).003

Numbers of New Cases and Cumulative Cases of Notifiable Infectious Diseases (by week of diagnosis)

Case diagnosis week		Week 26		Week 1—26	
Classification	Disease Diagnosed[1]	2016	2015	2016	2015
Category I	Plague	0	0	0	0
	Rabies	0	0	0	0
	SARS	0	0	0	0
	Smallpox	0	0	0	0
Category II	Acute Flaccid Paralysis	0	2	17	10
	Acute Viral Hepatitis type A	34	4	503	44
	Amoebiasis	12	7	144	187
	Anthrax	0	0	0	0
	Chikungunya Fever	0	0	7	3
	Cholera	0	0	0	4
	Dengue Fever	4	15	574	304
	Diphtheria	0	0	0	0
	Enterohemorrhagic E. coli Infection	0	0	0	0
	Epidemic Typhus Fever	0	0	0	0
	Hantavirus Pulmonary Syndrome	0	0	0	0
	Hemorrhagic Fever with Renal Syndrome	0	0	3	0
	Malaria	0	0	6	4
	Measles	0	0	5	25
	Meningococcal Meningitis	0	0	2	2
	Paratyphoid Fever	2	0	3	3
	Poliomyelitis	0	0	0	0
	Rubella	0	0	4	6
	Shigellosis	2	1	107	95
	Typhoid fever	0	0	2	17
	West Nile Fever	0	0	0	0
Category III	Acute Viral Hepatitis type B	3	3	47	63
	Acute Viral Hepatitis type C[5]	2	2	105	108
	Acute Viral Hepatitis type D	0	0	1	1
	Acute Viral Hepatitis type E	0	0	10	1
	Acute Viral Hepatitis untype	0	0	0	0
	Congential Rubella Syndrome	0	0	0	0
	Enteroviruses Infection with Severe Complications	3	0	11	3
	Haemophilus Influenza type b Infection	0	0	7	1
	Japanese Encephalitis	2	8	6	14
	Legionellosis	3	7	55	83
	Mumps[2]	13	19	289	408
	Neonatal Tetanus	0	0	0	0
	Pertussis	0	0	8	62
	Tetanus[2]	0	0	5	5
Category IV	Botulism	0	0	3	1
	Brucellosis	0	0	0	0
	Complicated Influenza	3	34	1840	659
	Complicated Varicella[4]	0	0	20	31
	Endemic Typhus Fever	2	2	9	12
	Herpesvirus B Infection	0	0	0	0
	Invasive Pneumococcal Disease	4	6	338	302
	Leptospirosis	1	1	31	29
	Lyme Disease	0	0	0	0
	Melioidosis	1	2	7	17
	Q Fever	3	3	26	23
	Scrub Typhus	23	8	225	159
	Toxoplasmosis	0	0	5	6
	Tularremia	0	0	0	0
Category V	Ebola Virus Disease	0	0	0	0
	Ebola-Marburg Hemorrhagic Fever	0	0	0	0
	Novel Influenza A Virus Infections[6]	0	0	0	0
	Lassa Fever	0	0	0	0
	Rift Valley Fever	0	0	0	0
	Middle East Respiratory Syndrome Coronavirus	0	0	0	0
	Yellow Fever	0	0	0	0

1. The following 8 chronic diseases are excluded from the table: MDR-TB, Tuberculosis, Syphilis, Gonorrhea, HIV Infection, AIDS, Hansen Disease and Creutzfeldt-Jakob Disease.
2. Reported cases.
3. Since 2014/1/1, "Varicella" was modified to "Complicated Varicella".
4. Since 2014/3/6, the case definition for confirmed Acute hepatitis C was changed from "meet the clinical and laboratory conditions" to "meet the clinical or laboratory conditions".
5. Since 2014/7/1, various subtypes of human cases of avian influenza are reported as "novel influenza A virus infections", a Category V Notifiable Infectious Disease. The original "H5N1 flu" and "H7N9 flu", which were respectively listed as a Category I Notifiable Infectious Disease and a Category V Notifiable Infectious Disease were removed from the list on the same day.
6. Since 2016/1/22, "Zika Virus Infection" was listed as a Notifiable Infectious Disease.

Suspected Clusters

●Twelve clusters were reported, including 6 diarrhea clusters, 3 upper respiratory tract infection clusters, 2 tuberculosis clusters, and 1 varicella cluster.

Imported Infectious Diseases

●9 confirmed cases were imported from 5 countries during Week 26 of 2016.

Country / Disease	Philippines	Thailand	Indonesia	Vietnam	Switzerland	Total
Dengue Fever	1	2	1			4
Amoebiasis	2		1			3
Shigellosis				1		1
Scrub Typhus					1	1
Total	3	2	2	1	1	9

Note: The statistics listed in this table include imported cases that were either confirmed or updated★ in the previous week.

●A total of 348 confirmed cases were imported from 29 countries in 2016.

●Top 3 imported diseases：Dengue fever (138), Amoebiasis (65), Hepatitis A (51).

●Top 3 countries responsible for most imported cases：Indonesia (152), Thailand (37), Philippines (27).

Summary of Epidemic

●**Enterovirus**：The epidemic activity has remained at its peak and is expected to decrease gradually during the summer vacation. Coxsackie A virus is currently the dominant strain circulating in the community. Sporadic cases of enterovirus 71 infection have been confirmed recently. This year, a total of 91 cases of enterovirus 71 infection, including 10 severe cases, 75 mild cases and 6 suspected severe cases, have been confirmed. The public is urged to enhance personal hygiene and stay vigilant for suspicious symptoms of enterovirus infection with severe complications in infants.

●**Dengue Fever**：Imported cases have continued to be reported. The recent high temperatures and occurrence of intermittent rain have still promoted mosquito growth, and elevated the risk of dengue transmission. The public is urged to clean up and remove any vector breeding sites and take prevention measures against mosquito bites.

●**Scrub Typhus**：The numbers of cases reported and confirmed are expected to continue increasing. The peak of scrub typhus season is during the months of June to July. The endemic areas are primarily eastern and outlying islands of Taiwan.

●**Japanese Encephalitis**：The peak of Japanese encephalitis season is during the months of June to July. The endemic areas are primarily central and southern Taiwan.

Numbers of New Cases and Cumulative Cases of Notifiable Infectious Diseases （by week of diagnosis）

Case diagnosis week		Week 27		Week 1—27	
Classification	Disease Diagnosed[1]	2016	2015	2016	2015
Category I	Plague	0	0	0	0
	Rabies	0	0	0	0
	SARS	0	0	0	0
	Smallpox	0	0	0	0
Category II	Acute Flaccid Paralysis	1	0	18	10
	Acute Viral Hepatitis type A	30	1	533	45
	Amoebiasis	8	6	152	193
	Anthrax	0	0	0	0
	Chikungunya Fever	0	0	7	3
	Cholera	0	0	0	4
	Dengue Fever	6	20	580	324
	Diphtheria	0	0	0	0
	Enterohemorrhagic E. coli Infection	0	0	0	0
	Epidemic Typhus Fever	0	0	0	0
	Hantavirus Pulmonary Syndrome	0	0	0	0
	Hemorrhagic Fever with Renal Syndrome	0	0	3	0
	Malaria	0	2	6	6
	Measles	1	0	6	25
	Meningococcal Meningitis	0	0	2	2
	Paratyphoid Fever	0	0	3	3
	Poliomyelitis	0	0	0	0
	Rubella	0	0	4	6
	Shigellosis	6	1	113	96
	Typhoid fever	0	0	2	17
	West Nile Fever	0	0	0	0
Category III	Acute Viral Hepatitis type B	2	0	49	63
	Acute Viral Hepatitis type C[5]	5	3	110	111
	Acute Viral Hepatitis type D	0	0	1	1
	Acute Viral Hepatitis type E	0	0	10	1
	Acute Viral Hepatitis untype	0	0	0	0
	Congential Rubella Syndrome	0	0	0	0
	Enteroviruses Infection with Severe Complications	2	0	13	3
	Haemophilus Influenza type b Infection	0	0	7	1
	Japanese Encephalitis	3	4	9	18
	Legionellosis	4	4	59	87
	Mumps[2]	14	10	303	418
	Neonatal Tetanus	0	0	0	0
	Pertussis	0	1	8	63
	Tetanus[2]	1	0	6	5
Category IV	Botulism	0	0	3	1
	Brucellosis	0	0	0	0
	Complicated Influenza	2	27	1842	686
	Complicated Varicella[4]	0	0	20	31
	Endemic Typhus Fever	1	4	10	16
	Herpesvirus B Infection	0	0	0	0
	Invasive Pneumococcal Disease	7	9	345	311
	Leptospirosis	1	0	32	29
	Lyme Disease	0	0	0	0
	Melioidosis	1	0	8	17
	Q Fever	0	0	26	23
	Scrub Typhus	17	21	242	180
	Toxoplasmosis	0	0	5	6
	Tularremia	0	0	0	0
Category V	Ebola Virus Disease	0	0	0	0
	Ebola-Marburg Hemorrhagic Fever	0	0	0	0
	Novel Influenza A Virus Infections[6]	0	0	0	0
	Lassa Fever	0	0	0	0
	Rift Valley Fever	0	0	0	0
	Middle East Respiratory Syndrome Coronavirus	0	0	0	0
	Yellow Fever	0	0	0	0

1. The following 8 chronic diseases are excluded from the table: MDR-TB, Tuberculosis, Syphilis, Gonorrhea, HIV Infection, AIDS, Hansen Disease and Creutzfeldt-Jakob Disease.
2. Reported cases.
3. Since 2014/1/1, "Varicella" was modified to "Complicated Varicella".
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5. Since 2014/7/1, various subtypes of human cases of avian influenza are reported as "novel influenza A virus infections", a Category V Notifiable Infectious Disease. The original "H5N1 flu" and "H7N9 flu", which were respectively listed as a Category I Notifiable Infectious Disease and a Category V Notifiable Infectious Disease were removed from the list on the same day.
6. Since 2016/1/22, "Zika Virus Infection" was listed as a Notifiable Infectious Disease.

Suspected Clusters

●Thirteen clusters were reported, including 7 tuberculosis clusters, 5 diarrhea clusters, and 1 upper respiratory tract infection cluster.

Imported Infectious Diseases

●11 confirmed cases were imported from 5 countries during Week 27 of 2016.

Country / Disease	Indonesia	Thailand	Philippines	Greece	Malaysia	Total
Dengue Fever	2	2			1	5
Amoebiasis	3		1			4
Shigellosis	1					1
Hepatitis A				1		1
Total	6	2	1	1	1	11

Note: The statistics listed in this table include imported cases that were either confirmed or updated★ in the previous week.

●A total of 359 confirmed cases were imported from 30 countries in 2016.

●Top 3 imported diseases：Dengue fever (143), Amoebiasis (69), Hepatitis A (52).

●Top 3 countries responsible for most imported cases：Indonesia (158), Thailand (39), Philippines (28).

Summary of Epidemic

●**Enterovirus**：The epidemic activity has remained at its peak and is expected to decrease gradually during the summer vacation. Coxsackie A virus is currently the dominant strain circulating in the community. Sporadic cases of enterovirus 71 infection have been confirmed recently. This year, a total of 95 cases of enterovirus 71 infection, including 11 severe cases, 81 mild cases and 3 suspected severe cases, have been confirmed. The public is urged to enhance personal hygiene and stay vigilant for suspicious symptoms of enterovirus infection with severe complications in infants.

●**Dengue Fever**：Imported cases have continued to be reported. After Typhoon Nepartak lashed Taiwan with torrential rain, the occurrence of intermittent rain that follows still promoted mosquito growths, and elevated the risk of dengue transmission. The public is urged to clean up and remove any vector breeding sites and take prevention measures against mosquito bites.

●**Scrub Typhus**：The numbers of cases reported and confirmed are expected to continue increasing. The peak of scrub typhus season is during the months of June to July. The endemic areas are primarily eastern and outlying islands of Taiwan.

●**Japanese Encephalitis**：The peak of Japanese encephalitis season is during the months of June to July. Although the endemic areas are primarily central and southern Taiwan, the other counties are expected to occur sporadic cases.

● **Leptospirosis and Melioidosis**：After Typhoon Nepartak lashed Taiwan, the residents in disaster areas are at risk of leptospirosis and melioidosis transmission.

The Taiwan Epidemiology Bulletin series of publications is published by Centers for Disease Control, Ministry of Health and Welfare, Taiwan (R.O.C.) since Dec 15, 1984.
Address : No.6, Linshen S. Road, Taipei, Taiwan 100 (R.O.C.) **Telephone No :** (02) 2395-9825
Publisher : Hsu-Sung Kuo
Editor-in-Chief : Wan-Ting Huang
Executive Editor : Hsueh-Ju Chen, Hsiu-Lan Liu **Website :** http://www.cdc.gov.tw/
Suggested Citation :
[Author].[Article title].Taiwan Epidemiol Bull 2016;32:[inclusive page numbers]. [DOI]