疫情報導
TAIWAN EPIDEMIOLOGY BULLETIN
October 27, 2015 Vol.31 No.20

Original Article

Outbreak Investigation and Control Experience of School Tuberculosis in Taipei Region

Chu-Ming Chiu *, Chun-Ru Do, Jiunn-Shyan Julian Wu,
Shih-Tse Huang, Hwan-Feng Wang

Abstract

The school campus is one of the most common sites related to tuberculosis outbreak in community. We report a large school tuberculosis outbreak in Taipei region.

Based on the expert meetings, local public health authorities took actions including: 1) expanding contact examination; 2) transferring and assessing of latent tuberculosis infection (LTBI) treatment; 3) following up chest X-ray every six months; and 4) improving the ventilation systems of the school. We tracked 1,081 tuberculosis contacts; there were 22 confirmed tuberculosis case-patients during the two-year follow up and 12 patients had isolates with matching restricted fragment length polymorphism (RFLP) genotypes.

We recommend: 1) implementing regular chest X-ray examination for school employees and students; 2) fulfilling the student health examination exactly; 3) emphasizing the risk communication among contacts; 4) expanding Seven Score Screen Method; 5) setting the monitoring mechanisms of respiratory symptoms in schools; and 6) promoting the Indoor Air Quality Act which is associated to air quality improvement in schools.

Keywords：School；Outbreak；Tuberculosis cluster；Investigation and control experience

Taipei Regional Center, Taiwan Centers for Disease Control, Ministry of Health and Welfare, Taiwan
Corresponding author：Chu-Ming Chiu*
E-mail：jumin@cdc.gov.tw

Received：Jan. 06, 2014
Accepted：Feb. 17, 2014
DOI：10.6525/TEB.20151027.31(20).001

Effectiveness of Active Tuberculosis Screening Program for Adolescents and Young Adults with a Household Register in Mountain Townships, 2011–2012

Yun-Tsan Liao[1 *], Chien-Ban Hsu[1], Chin-Hui Yang[2], Chang-Hsun Chen[1]

Abstract

Taiwanese people residing in remote areas, mostly in mountain townships, have been one of the target populations of Taiwan CDC's chest X-ray (CXR) screening program for decades, but most adolescent and young adults who study away from their hometowns might miss the opportunity of the active screening program for tuberculosis (TB). Therefore, Taiwan CDC coordinates with educational institutions to implement the program, "active tuberculosis screening program for students with a household register in mountain townships", to provide screening services for this specific vulnerable group.

The program aims to provide free chest X-rays examination and uses X-ray patrol truck. In 2011, the screening program focused on the students at high schools and community colleges with a household register in mountain townships, and was then expanded to college and university students in 2012.

The results revealed that detection rate of TB was 134.7 per 100,000 in 2011, which was about 6.6 folds of risks, comparing to the same age groups of the national population. The detection rate was 105.5 per 100,000 in 2012, or a crude relative risk of 6.1 times higher than the national incidence. Especially, detection rate (179.2 per 100,000) was the highest among senior high school students participating screening in 2012. We also found that, although the major activity areas of the target population were not in the mountain townships, detection rate of TB identified by the active screening services was still as high as people staying in mountain townships in Taiwan.

Informed by the results, we modify our prevention policies accordingly. In 2013, the target population was included as part of the ongoing project commissioned to the local health authorities for the implementation of infectious disease prevention by Taiwan CDC.

Keywords：Tuberculosis；Active screening；Students from mountain township

[1]Division of HIV/AIDS and TB, Centers for Disease Control, Ministry of Health and Welfare, Taiwan
[2]Division of Preparedness and Emerging Infectious Diseases, Centers for Disease Control, Ministry of Health and Welfare, Taiwan

Corresponding author：Yun-Tsan Liao[1*]
E-mail：yuntsan@cdc.gov.tw
Received：Mar. 03, 2015
Accepted：May. 12, 2015
DOI：10.6525/TEB.20151027.31(20).002

week 40-41 (Oct. 4 - Oct. 17 , 2015)

DOI: 10.6525/TEB.20151027.31(20).003

Weekly Data of Notifiable Infectious Diseases（by week of diagnosis）

Case diagnosis week		Week 40		Week 1－40	
Classification	**Disease Diagnosed[1]**	**2015**	**2014**	**2015**	**2014**
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	0	13	29
	Acute Viral Hepatitis type A	5	2	100	83
	Amoebiasis	13	15	287	215
	Anthrax	0	0	0	0
	Chikungunya Fever	0	0	4	7
	Cholera	0	0	8	4
	Dengue Fever	2592	786	23213	3919
	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	2	1
	Malaria	0	1	8	14
	Measles	0	0	28	20
	Meningococcal Meningitis	0	0	2	3
	Paratyphoid Fever	0	0	2	6
	Poliomyelitis	0	0	0	0
	Rubella	0	0	6	5
	Shigellosis	5	1	141	105
	Typhoid fever	0	0	23	19
	West Nile Fever	0	0	0	0
Category III	Acute Viral Hepatitis type B	3	1	97	90
	Acute Viral Hepatitis type C[5]	4	3	163	137
	Acute Viral Hepatitis type D	0	0	1	1
	Acute Viral Hepatitis type E	0	0	2	10
	Acute Viral Hepatitis untype	0	0	2	4
	Congential Rubella Syndrome	0	0	0	0
	Enteroviruses Infection with Severe Complications	0	0	4	6
	Haemophilus Influenza type b Infection	0	0	2	2
	Japanese Encephalitis	0	0	28	15
	Legionellosis	3	3	130	102
	Mumps[2]	11	25	608	707
	Neonatal Tetanus	0	0	0	0
	Pertussis	0	3	70	54
	Tetanus[2]	1	0	8	4
Category IV	Botulism	0	0	2	0
	Brucellosis	0	0	2	0
	Complicated Influenza	3	5	802	1751
	Complicated Varicella[4]	1	3	41	44
	Endemic Typhus Fever	2	0	28	21
	Herpesvirus B Infection	0	0	0	0
	Invasive Pneumococcal Disease	7	8	410	455
	Leptospirosis	5	6	63	70
	Lyme Disease	0	0	2	2
	Melioidosis	1	3	26	27
	Q Fever	0	0	35	43
	Scrub Typhus	6	8	283	331
	Toxoplasmosis	0	0	9	8
	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.

Suspected Clusters

●Twelve clusters were reported, including 9 diarrhea clusters, 2 tuberculosis clusters, and 1 varicella cluster.

Imported Infectious Diseases

●15 confirmed cases were imported from 9 countries during Week 40 of 2015.

Country / Disease	Indonesia	Malaysia	Vietnam	Sudan	Hong Kong	China	Thailand	Philippines	Cambodia	Total
Dengue Fever		1	2				1	1	1	6
Shigellosis	3									3
Hepatitis A		1		1	1					3
Amoebiasis	2									2
Legionellosis						1				1
Total	5	2	2	1	1	1	1	1	1	15

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

●A total of 583 confirmed cases were imported from 32 countries in 2015.

●Top 3 imported diseases：Dengue fever (253), Amoebiasis (164), Shigellosis (70).

●Top 3 countries responsible for most imported cases：Indonesia (287), Philippines (52), Vietnam (45).

Summary of Epidemic

●**Dengue Fever**：Dengue activity has entered the peak of the epidemic season. The public is urged to clean up and remove any vector breeding site, and doctors are advised to stay vigilant for suspected cases prevent dengue transmission. The epidemic has slowed down and the number of new cases reported during Week 40 is 30% less than that reported during Week 39 in Tainan City. On the other hand, the epidemic has increased slightly in Kaohsiung City and the number of new cases reported during Week 40 is 1.3 times higher than that reported during Week 39. The hot spots of the epidemic in Kaohsiung City are Sanmin District, Lingya District and Cianjhen District. Sporadic indigenous cases have continued to be reported in Pingtung County. Since May 1, 2015, 89 deaths were confirmed to be caused by dengue infection, while 43 deaths are waiting to be reviewed. As of now, 52 dengue cases are still being treated in the intensive care unit (ICU), and 89.4% of the reported cases have recovered.

●**Enterovirus**：One severe case of enterovirus caused by Coxsackie B5 has been confirmed. Enterovirus season has continued and enterovirus activity is above the epidemic threshold. During Week 40, the numbers of visits to outpatient services and ER for enterovirus infection are higher than that during the same period in the last four years. Coxsackie A6 virus is currently the dominant strain circulating in the community.

●**Influenza**：Influenza activity has not fluctuated and remained at the baseline level. H3N2 is currently the dominant strain circulating in the community. Thus far, none of the viruses identified has shown drug resistance.

Weekly Data of Notifiable Infectious Diseases（by week of diagnosis）

Case diagnosis week		Week 41		Week 1—41	
Classification	**Disease Diagnosed[1]**	**2015**	**2014**	**2015**	**2014**
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	0	13	29
	Acute Viral Hepatitis type A	6	3	106	86
	Amoebiasis	0	10	287	225
	Anthrax	0	0	0	0
	Chikungunya Fever	0	0	4	7
	Cholera	0	0	8	4
	Dengue Fever	2295	864	25501	4783
	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	2	1
	Malaria	0	1	8	15
	Measles	1	0	29	20
	Meningococcal Meningitis	0	0	2	3
	Paratyphoid Fever	0	2	2	8
	Poliomyelitis	0	0	0	0
	Rubella	0	0	6	5
	Shigellosis	4	1	145	106
	Typhoid fever	1	1	24	20
	West Nile Fever	0	0	0	0
Category III	Acute Viral Hepatitis type B	0	2	97	92
	Acute Viral Hepatitis type C[5]	3	4	166	141
	Acute Viral Hepatitis type D	0	0	1	1
	Acute Viral Hepatitis type E	0	0	2	10
	Acute Viral Hepatitis untype	0	0	2	4
	Congential Rubella Syndrome	0	0	0	0
	Enteroviruses Infection with Severe Complications	1	0	5	6
	Haemophilus Influenza type b Infection	0	1	2	3
	Japanese Encephalitis	0	0	28	15
	Legionellosis	4	3	134	105
	Mumps[2]	15	13	623	720
	Neonatal Tetanus	0	0	0	0
	Pertussis	2	2	72	56
	Tetanus[2]	0	1	8	5
Category IV	Botulism	0	0	2	0
	Brucellosis	0	0	2	0
	Complicated Influenza	2	2	804	1753
	Complicated Varicella[4]	2	0	43	44
	Endemic Typhus Fever	1	0	29	21
	Herpesvirus B Infection	0	0	0	0
	Invasive Pneumococcal Disease	5	10	415	465
	Leptospirosis	0	3	63	73
	Lyme Disease	0	0	2	2
	Melioidosis	1	0	27	27
	Q Fever	1	0	36	43
	Scrub Typhus	12	9	295	340
	Toxoplasmosis	0	3	9	11
	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.

Suspected Clusters

●Seventeen clusters were reported, including 9 diarrhea clusters, 6 tuberculosis clusters, 1 upper respiratory tract infection cluster, and 1 varicella cluster.

Imported Infectious Diseases

●12 confirmed cases were imported from 9 countries during Week 41 of 2015..

Country / Disease	Indonesia	Cambodia	Philippines	South Africa	Vietnam	Singapore	Myanmar	Thailand	Malaysia	Total
Dengue Fever	1		1	1	1	1	1	1	1	8
Amoebiasis	2									2
Hepatitis A		2								2
Total	3	2	1	1	1	1	1	1	1	12

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

●A total of 596 confirmed cases were imported from 33 countries in 2015.

●Top 3 imported diseases：Dengue fever (261), Amoebiasis (166), Shigellosis (70).

●Top 3 countries responsible for most imported cases：Indonesia (290), Philippines (53), Vietnam (46).

Summary of Epidemic

●**Dengue Fever**：Dengue activity has entered the peak of the epidemic season. The public is urged to clean up and remove any vector breeding sites, and doctors are advised to stay vigilant for suspected cases to prevent dengue transmission. The epidemic has slowed down and the number of new cases reported during Week 41 is 30% less than that reported during Week 40 in Tainan City. The majority of the cases were reported in East District, Tainan City. On the other hand, the epidemic has increased slightly in Kaohsiung City and the number of new cases reported during Week 41 is 1.2 times higher than that reported during Week 40. Notably, the number of new cases reported per day in Kaohsiung was higher than that in Tainan City. The hot spots of the epidemic in Kaohsiung City are Sanmin District, Lingya District and Cianjhen District. Sporadic indigenous cases have continued to be reported in Pingtung County. Since May 1, 2015, 106 deaths were confirmed to be caused by dengue infection, while 42 deaths are waiting to be reviewed. As of now, 42 dengue cases are still being treated in the intensive care unit (ICU), and 92.0% of the reported cases have recovered.

●**Enterovirus**：Enterovirus season has continued and enterovirus activity is above the epidemic threshold. The number of visits to outpatient services for enterovirus infection during Week 41 is higher than that during Week 40, and also the numbers of visits to outpatient services and ER for enterovirus infection are higher than that during the same period in the last four years. Coxsackie A16 virus is currently the dominant strain circulating in the community.

●**Influenza**：Influenza activity has not fluctuated and remained at the baseline level. H3N2 is currently the dominant strain circulating in the community.

The Taiwan Epidemiology Bulletin series of publications is published by Centers for Disease Contrd, 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 2015;31:[inclusive page numbers]. [DOI]