柒、附錄

一、ICEID 會議簡要議程

ICEID 2018 Schedule-at-a-Glance

Sunday, August 26, 2018	Monday, August 27, 2018
	Registration: 7:30 AM – 4:30 PM
	Poster set-up: 7:00 AM – 8:00 AM
	Concurrent Plenary Sessions: 8:00 AM – 9:00 AM
	A1. Healthcare-Associated Infections in Europe and the United States
	A2. Zika: Human Neurological Outcomes
	A3. Challenges for Disease Elimination and Eradication
	A4. Lessons Learned from the West Africa Ebola Outbreak
	Concurrent Plenary Sessions: 9:10 AM – 10:10 AM
	B1. Genomic Epidemiology
	B2. Infectious Diseases in Humanitarian/ Disaster Settings
	B3. Vaccines for Dengue, A Major *Aedes*-Transmitted Arbovirus
	B4. IHR and Global Health Security
	Break: 10:10 AM – 10:30 AM
	Concurrent Panel Sessions: 10:30 AM – 12:00 PM
	C1. Emerging Vector-Borne Diseases and New Control Strategies
	C2. Bioinformatics and Big Data in Public Health
	C3. Respiratory Diseases: Focus on *Legionella*, MERS, and Plague
	C4. Emerging Issues in Sexually Transmitted Diseases
	Lunch (*on your own*): 12:00 PM – 12:30 PM
	Lunchtime Panel Session: 12:15-1:30 PM* Emerging and Re-Emerging Infectious Diseases in the WHO Eastern Mediterranean Region
	Poster Sessions with Authors: 12:30 PM – 1:45 PM
	Concurrent Panel Sessions: 1:45 PM – 3:15 PM
	D1. New Data Systems and Platforms for Disease Surveillance
	D2. Bugs from Drugs: Emerging Infections in People Who Use Opioids
	D3. Emerging Fungal Infections in Healthcare Settings
	D4. Environmental/Ecological Factors and Emerging Infectious Diseases: A Multi-Continental Approach
	Break: 3:15 PM – 3:30 PM
	Oral Presentation Abstracts: 3:30 PM – 5:00 PM
	E1. Novel Surveillance Strategies
	E2. Emerging Threats in Healthcare
	E3. Vector-Borne Diseases
	E4. Frontline Public Health
Opening Keynote Session 5:30–7:30 PM	*Limited sandwiches & salads available for purchase outside meeting room
Opening Reception 7:30–9:30 PM	

Tuesday, August 28, 2018	Wednesday, August 29, 2018
Registration: 7:30 AM – 4:30 PM	Registration: 8:00 AM – 2:00 PM
Poster set-up: 7:00 AM – 8:00 AM	Poster set-up: 7:00 AM – 8:00 AM
Concurrent Plenary Sessions: 8:00 AM – 9:00 AM	Concurrent Plenary Sessions: 8:00 AM – 9:00 AM
F1. The Microbiome and Human Health	K1. Forecasting Emerging Infections
F2. Public Health Preparedness and Outbreak Response	K2. 100 Years After the 1918 Influenza Pandemic
F3. Reemergence of Vaccine-Preventable Diseases: Focus on Diphtheria	K3. Addressing Neglected Tropical Diseases: Focus on Guinea Worm
F4. Cholera: The Beginning of the End?	K4. Globalization of People and Disease
Concurrent Plenary Sessions: 9:10 AM – 10:10 AM	Concurrent Plenary Sessions: 9:10 AM – 10:10 AM
G1. National Control of Carbapenem-Resistant Enterobacteriaceae	L1. Infectious Causes of Child Mortality
G2. Advanced Molecular Detection of Infectious Diseases	L2. Novel Surveillance Strategies
G3. Africa CDC	L3. Emerging Tickborne Diseases
G4. One Health	L4. Foodborne Disease Surveillance and Culture-Independent Diagnostic Tests
Break: 10:10 AM – 10:30 AM	Break: 10:10 AM – 10:30 AM
Concurrent Panel Sessions: 10:30 AM – 12:00 PM	Concurrent Panel Sessions: 10:30 AM – 12:00 PM
H1. Emerging Scientific Issues for Global Immunization Programs	M1. Emerging Paths to Publishing Your Work: The Good, the Fast, and the Ugly
H2. Viral Hemorrhagic Fevers	M2. Rodent-Borne Zoonoses
H3. More Answers, More Questions: Whole-Genome Sequencing in Foodborne Disease Epidemiology	M3. Mathematical Modeling to Better Understand the Emergence and Transmission of Multidrug-Resistant Organisms
H4. Emerging Infections Associated with Life-Saving Medical Devices	M4. Make History: End TB
Lunch (*on your own*): 12:00 PM – 12:30 PM	Lunch (*on your own*): 12:00 PM – 12:30 PM
Lunchtime Panel Session: 12:15-1:30 PM* Building a GHS Implementation Evidence Base: Demonstrating Impact of GHS/IHR Investments	Lunchtime Panel Session: 12:15-1:30 PM* Measuring Progress and Impact of Global Health Security Capacity-Building Implementation in Partner Countries
Poster Sessions with Authors: 12:30 PM – 1:45 PM	Poster Sessions with Authors: 12:30 PM – 1:45 PM
Concurrent Panel Sessions: 1:45 PM – 3:15 PM	Concurrent Panel Sessions: 1:45 PM – 3:15 PM
I1. Rising Above the Noise to Communicate Sound Science and Public Health Advice	N1. Prevention and Control of Viral Hepatitis
I2. Detecting and Preventing Novel Transplant-Associated Infections	N2. Microbiome: Pathology, Ecology, Epidemiology
I3. Genomic Epidemiology: From the Lab to the Street	N3. Epidemic Prediction Initiative: Moving from Research to Decisions
I4. Monitoring for the Next Pandemic Threat: Emerging Influenza Viruses (H7N9)	N4. Pathogen Discovery and Investigation of New Syndromes
Coffee Break: 3:15 PM – 3:30 PM	Coffee Break: 3:15 PM – 3:30 PM
Oral Presentation Abstracts: 3:30 PM – 5:00 PM	Oral Presentation Abstracts: 3:30 PM – 5:00 PM
J1. Molecular Epidemiology	O1. Detection and Diagnosis
J2. Preparedness and Response	O2. Seasonal Influenza and RSV
J3. Viral Zoonoses	O3. Evolving Challenges
J4. Late Breakers I	O4. Late Breakers II
*Limited sandwiches & salads available for purchase outside meeting room	

二、本署投稿論文摘要(節錄自大會手冊)

Foodborne Infections

Board 38. The Trend of Foodborne Disease Outbreaks in Taiwan (1991–2016)

L. Lin, Y. Huang, W. Cheng, H. Lin
Food and Drug Administration, Ministry of Welfare and Health, Executive Yuan, Taipei, Taiwan

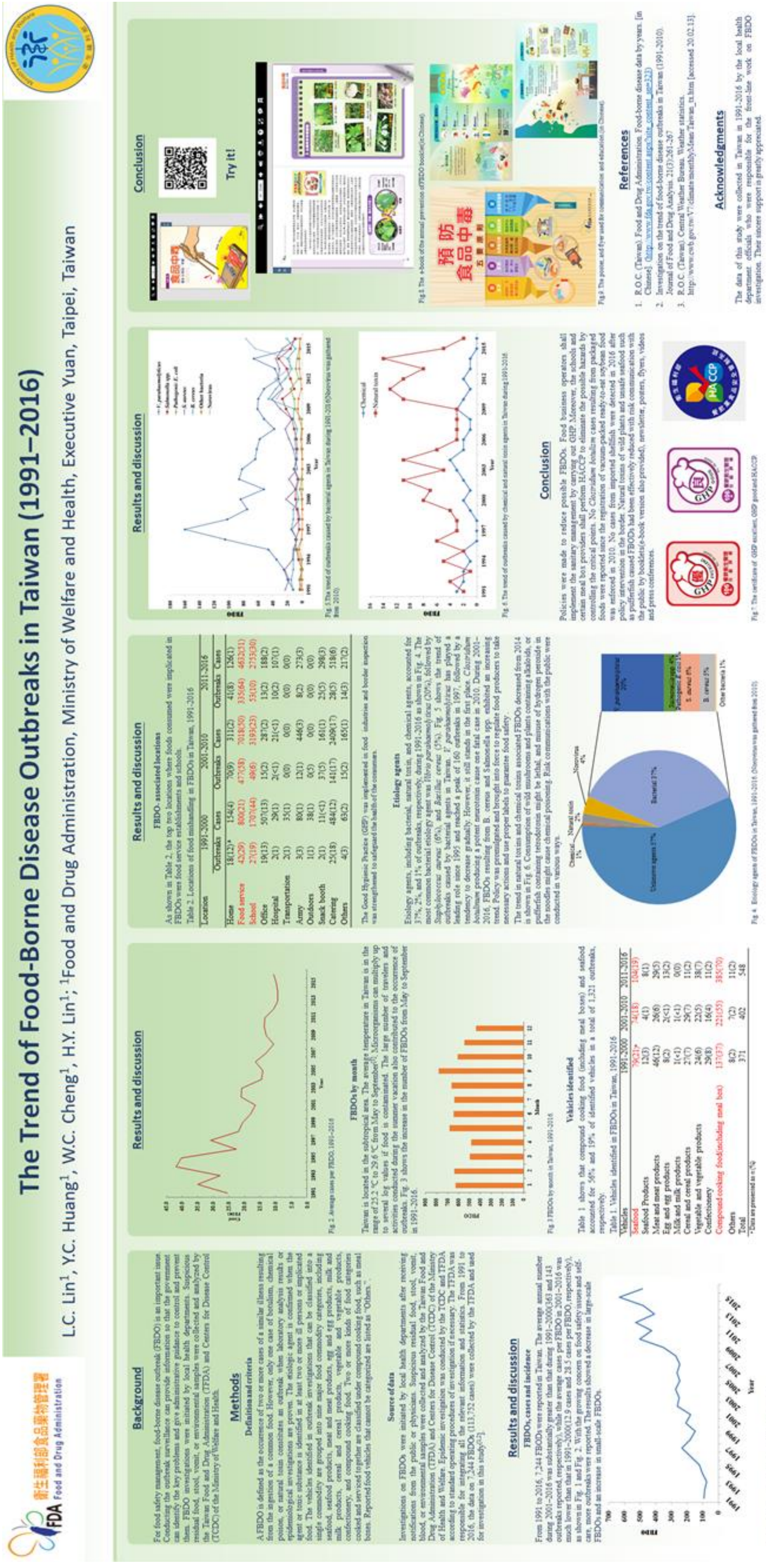
Background: For food safety management, foodborne disease outbreaks (FBDO) are an important issue. Conducting outbreak surveillance can provide information so that the government can identify the key problems and give administrative guidance to control and prevent them. **Methods:** FBDO investigations were initiated by local health departments. Suspicious residual food, stool, vomit, or environmental samples were collected and analyzed by the Taiwan Food and Drug Administration (TFDA) and Centers for Disease Control (TCDC) of the Ministry of Welfare and Health. **Results:** Among the results of 26 years (1991–2016) of investigation on FBDOs, 7,244 FBDOs (113,752 cases) were reported. The most common bacterial etiology agent was *Vibrio parahaemolyticus* (20.5%), followed by *Staphylococcus aureus* (6.6%), and *Bacillus cereus* (4.9%). The average annual number during 2001–2016 was substantially greater than that during 1991–2000 (363 and 143 outbreaks reported, respectively), while the average cases per outbreak in 2001–2016 was much lower than that in 1991–2000 (12.9 cases and 28.5 cases per outbreak, respectively). Small-scale FBDOs increased during 2001–2016 compared to that during 1991-2000. During 2001–2016, FBDOs resulting from *B. cereus* and *Salmonella* spp. exhibited an increasing trend, whereas that from *V. parahaemolyticus* showed a decreasing trend. **Conclusions:** Policies were made to reduce possible FBDOs. Food business operators shall implement the sanitary management by carrying out GHP. Moreover, the schools and certain meal box providers shall perform HACCP to eliminate the possible hazards by controlling the critical points. No *Clostridium botulism* cases resulting from packaged foods were reported since the registration of vacuum-packed ready-to-eat soybean food was enforced in 2010. No cases from imported shellfish were detected in 2016 after policy intervention in the border. Natural toxins of wild plants and unsafe seafood such as pufferfish caused FBODs had been effectively reduced with risk communication with the public by booklets, posters, flyers, and press conferences.

Board 39. Multi-City Viral Diarrheal Disease Outbreaks Associated with Raw Shellfish Consumption in Taiwan in 2012 and 2015

L. Lin, Y. Huang, W. Cheng, H. Lin
Food and Drug Administration, Ministry of Welfare and Health, Executive Yuan, Taipei, Taiwan

Background: Sapovirus and norovirus cause disease in human and can be found in shellfish from contaminated water. The infection in humans can cause diarrhea, throwing up, nausea, and stomach pain. In May-June 2012 and 2015, excess number of viral gastroenteritis cases in multiple cities were reported to competent authority. The samples were examined and investigations were conducted to find the potential risk factors. **Methods:** Suspicious residual food, stool, vomit, or environmental samples were collected and analyzed. Meanwhile, product management distribution system, medical records, and laboratory records were reviewed. Person-to-person interviews with a structured questionnaire were implemented and case-control study was performed to identify possible risk factors in the 2012 outbreak. Food supply chains, including marine harvest area that were related to the cases, were surveyed to examine the existence of the pathogen in both outbreaks. **Results:** In 2012, there were 77 reported cases from Mayto June in Taipei and Taichung. Consuming raw shellfish imported from certain harvest area was significantly associated with sapovirus infection (OR = 20.5). In 2015, 136 cases were reported from May to June in Taitung, and norovirus GI and GII were detected in the imported shellfish from a certain country. No cases were reported in 2012 and 2015 after the policy intervention such as batch-by-batch inspection in the border. **Conclusions:** Consuming raw products, especially shellfish from contaminated water, could attribute risk to gastroenteritis outbreak. Health education should be emphasized and awareness of disease severity should be raised to the public continuously. Meanwhile, collaboration between the border inspection sector and the food safety sector is needed. The policy that shellfish imported for human consumption shall be accompanied with a health certificate, including the information of the harvest area, and issued by the competent authority of exporting country came into effect on January 1, 2018, in Taiwan to safeguard the health of the consumers.

三、本署論文海報內容(實際尺寸 4 呎 X 8 呎)



Multi-city Viral Diarrhea Disease Outbreaks Associated with Consuming Raw Shellfish in Taiwan in 2012 and 2015

L.C. Lin[1], Y.C. Huang[1], W.C. Cheng[1], H.Y. Lin[1]; [1]Food and Drug Administration, Ministry of Welfare and Health, Executive Yuan, Taipei, Taiwan

Background

Sapovirus and Norovirus cause disease in human and can be found in shellfish from contaminated water. The infection is disease in human with symptoms of diarrhea, throwing up, nausea and stomach pain. In May-June 2012 and 2015, excess number of viral gastroenteritis cases in multi-city were reported to competent authority. The investigations were conducted to find the potential risk factors.

Methods

Epidemic investigation in 2012

From May to June 2012, 77 patients were sick suspecting after eating raw oyster provided by a chain buffet restaurant in Taiwan. Person-to-person interviews with structured questionnaire were implemented and a case-control study was conducted on attendees from four universities to identify possible risk factors. A case was defined as a person who had diarrhea or vomiting within one week after dining in any 5 branch of this restaurant located in Taipei and New Taipei City.

Among the 169 party attendees, 100 (59%)were interviewed regarding their basic characteristics, time of exposure, food items, onset date, symptoms and medical treatment. The questionnaire data were analyzed using the Epi-Info software, and the foods were analyzed using the chi-square test to find the correlation between different foods and morbidity. If several foods were found to be related to the disease ($p < 0.05$), logistic regression was then used to find out what kind of food was exactly caused the outbreak.

Suspicious samples were analyzed by TFDA (residual food and environmental samples) and TCDC (stool, vomit and anal swab samples). Food and environmental samples were tested for *V. parahaemolyticus*, *Salmonella spp.*, pathogenic *E.coli*, *S. aureus*, *V. cholera*, *B. cereus*, noroviruses, sapovirus, hepatitis A virus, astrovirus, hepatitis E virus, enterovirus, rotavirus. Vomitus, anal swab and stool samples were tested for *Salmonella spp.*, *V. parahaemolyticus*, Enteropathogenic *E. coli*, *S. aureus*, *B. cereus*, sapovirus and norovirus.

Food supply chains including marine harvest area that were related to the cases were surveyed to examine the existence of pathogen.

Epidemic investigation in 2015

From May to June 2015, 136 cases (4 and 7 groups, respectively) were reported after traveling to Taitung and consuming raw shellfish in the same restaurant located in Ludao islet of Taitung. The in-depth interviews with cases of 7 groups who traveled in June were performed to clarify the traveling history, basic characteristics, food items, onset date and symptoms. Suspicious samples were collected and analyzed by TFDA (residual food and environmental samples) and TCDC (stool samples).

Raw oyster samples (imported from certain country) were tested for Norovirus, while other food and environmental samples were tested for *V. parahaemolyticus*, *Salmonella spp.*, pathogenic *E.coli*, *S. aureus*, and *B. cereus*. Stool samples were tested for *V. cholera*, *Salmonella spp.*, *S. dysenteriae*, *V. parahaemolyticus*, Enteropathogenic *E.coli*, *S. aureus*, *B. cereus*, rotavirus and norovirus.

Food supply chains including marine harvest area that were related to the cases were surveyed to examine the existence of pathogen.

Results and discussion

I. Epidemic investigation in 2012

Of the 48 persons who met the case definition, 42 (88%) had diarrhea, 38 (81%) had vomiting and 20 (43%) had fever. The mean incubation time was 37.9 hours[1] (as shown in Fig. 1).

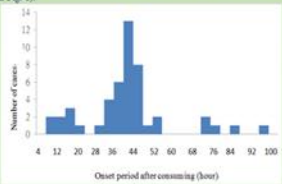


Fig.1. Epidemic curve of the diarrhetic outbreak in Taipei (n=48).

Illness was associated with consuming raw oyster (odds ratios: 20.5, 95% confidence interval: 5.6-74.4), as shown in Table 1.

Table 1. Risk factors analysis of the attendees.

	Attendees getting ill		Attendees not getting ill		Relative risk	95% CI
	Eat	Not eat	Eat	Not eat		
Raw oyster	45	3	22	30	20.5	5.6-74.4
Sashimi	40	8	34	18	2.6	1.0-6.8
Shrimp	32	16	26	26	2.0	0.9-4.5
Nigiri sushi	9	39	12	40	0.8	0.3-2.0
Other raw food	7	41	9	43	0.8	0.3-2.4
Salad	17	31	22	30	0.7	0.3-1.7
Fruits	25	23	31	21	0.7	0.3-1.6
Sushi	28	20	35	17	0.7	0.3-1.5
Crab	0	48	3	49	0	Not defined

Thirty two human specimens including 7 stools, 4 vomits, and anus wipe were collected. Three of four vomitus and five of seven stools tested positive for sapovirus[1]. Among 29 oyster samples from certain country, 7 samples were tested positive for pathogenic microorganisms, including *B. cereus*, norovirus and astrovirus[2] (as shown as Table 2).

Table 2. Results of the food and environmental samples.

	Bacterium		Virus	
	Sample No.	Result(No.)	Sample No.	Result(No.)
Sashimi	9	negative	9	negative
Raw oyster	29	*B. cereus*(4)	29	Norovirus & astrovirus(3)
Reverse osmosis water	1	negative	1	negative
Ice cube	1	negative	1	negative
Environmental sample	17	negative	17	negative

Results and discussion

Meanwhile, information gathered from international alert in May indicated that the shellfish from certain harvest area of certain country might be contaminated by stool and virus[2] and could cause diarrhea disease outbreak.

According to the symptoms, incubation time, statistical analysis and laboratory results, we concluded the cluster was related to sapovirus and eating raw oyster was associated with illness.

During the investigation, the chain restaurant was ordered to suspend operations, cease sales and seal such products according to the Act Governing Food Safety and Sanitation. And no cases reported since June 8 in 2012.

II. Epidemic investigation in 2015

After in-depth interviews with 78 patients by phones, a common source for those 7 groups who traveled in June was suspected because of a single epidemic peak observed [4], as shown in Fig.2.

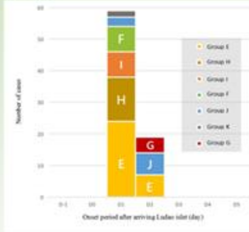


Fig.2. Epidemic curve of the in June (n=78).

Norovirus was detected in the samples both from 11 patients' stool[3] and 2 oysters provided by certain restaurant.

Table 3. Results of the food and environmental samples.

	Bacterium		Virus	
	Sample No.	Result	Sample No.	Result
Raw oyster	0	-	2	Norovirus (1 for GI-GII, 1 for GII)
Clam	1	*S. aureus*	0	-
Sashimi	1	negative	0	-
Other residual food	11	negative	0	-
Tap water	4	negative	0	-
Ice cube	1	negative	0	-
Seaweed	1	negative	0	-
Environmental sample	22	negative		-
Total	41	1	2	2

-: not tested

Results and discussion

Judged from the norovirus incubation period, all patients had food provided by certain restaurant. The temporal evidence also suggested the contaminated oysters in restaurant caused the outbreaks. Further sequencing analysis showed that the norovirus detected from patients and oysters belonged to the same group and confirmed the assumption.

According to epidemiological investigation, the correlation between FBDO and oyster was significant. The investigation concluded that the oyster contaminated by norovirus was the etiological agent that should be destroyed according to the Act Governing Food Safety and Sanitation. The restaurant in Ludao islet was asked to stop the supply of raw oyster since 1st July, 2015 and no further informed cases.

Policy interventions

Oysters have caused multi-city viral diarrhea disease outbreaks in 2012 and 2015. In 2012, TFDA found that the oysters were imported from certain country located in northeast Asia after tracing back to the suppliers. The food business operator was ordered to seal oysters, cease sales and destroy them all. There were many policies implemented in order to decrease the risk of outbreak including strengthening the regulation for importation of oysters, evaluating the high-risk place of origin, and enhancing associated training and on-job education for the food service industry. One of policies was that TFDA had forced the oyster and shellfish from the certain country to be inspected with batch-by-batch verification from June 9, 2012.

In 2015, the oysters which caused the viral diarrhea disease outbreaks were from exactly the same country as that in 2012. The shellfish products imported from the certain country were asked to tested for norovirus by three consecutive batches of products designated for batch-by-batch verification. To strengthen the management of imported shellfish from the certain country, TFDA has implemented new policy since March 20, 2016: shellfish products from the country shall be accompanied with a health certificate including the information of the harvest area and issued by the competent authority of exporting country.

Meanwhile, there were at least five international alerts related to shellfish products which were widely spread in Europe, North America, East Asia and Oceania and contaminated with paralytic shellfish poison(PSP), norovirus and red tide algal bloom in 2016. To safeguard the safety of consuming imported shellfish, especially raw shellfish, risk communication with the public were continuously conducted by booklets(e-book version also provided), posters, flyers, videos, comics and press conferences.

Fig.3. The comics used for communication and education.

Policy intervention

Fig.3. The poster, and flyer used for communication and education (in Chinese).

Future work

Consuming raw products especially shellfish from contaminated water could attribute risk to gastroenteritis outbreak. Health education should be emphasized and awareness of disease severity should be raised to the public continuously. Meanwhile, collaboration between border inspection sector and food safety sector is needed. **The policy that shellfish imported for human consumption shall be accompanied with a health certificate including the information of the harvest area and issued by the competent authority of exporting country was come into effect on 1st January 2018 in Taiwan to safeguard the health of the consumers.**

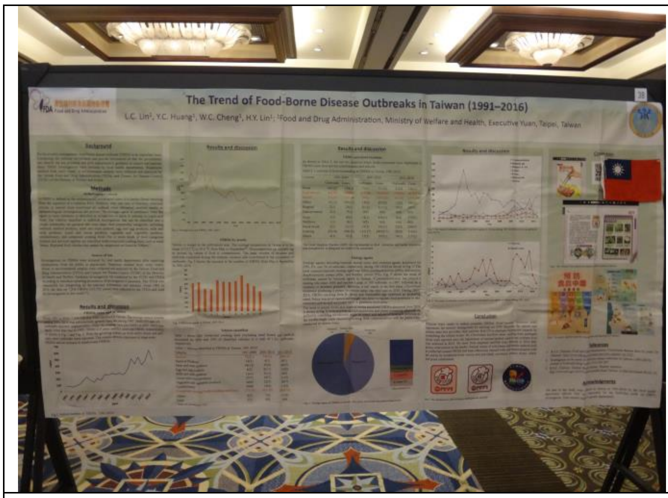
References

1. Sapovirus Cluster in a Chain Buffet Restaurant, 2012[in Chinese]. Taiwan Epidemio Bull. 21(28):349-353.
2. Investigation and Administrative Disciplinary Action on the Food-borne Outbreaks Disease Caused by Oyster Provided by Chain Restaurant in 2012[in Chinese]. Ann. Rept. Food Drug Res. 4 : 420-425
3. US Food and Drug Administration (US FDA). 2012. Important information for food distributors, retailers, and food service operators regarding the sourcing of molluscan shellfish from Korea. [http://www.fda.gov/Food/NewsEvents/ConstituentUpdates/ucm304600.htm].
4. Gastroenteritis Outbreak in Tour Groups, Lyudao, 2015[in Chinese]. Taiwan Epidemio Bull. 32(14):301-306.
5. Investigation and Administrative Action on Foodborne Disease Outbreaks Caused by Consuming Raw Oyster in Ludao Township in 2015[in Chinese]. Ann. Rept. Food Drug Res. 7 : 76-81 2016.

Acknowledgements

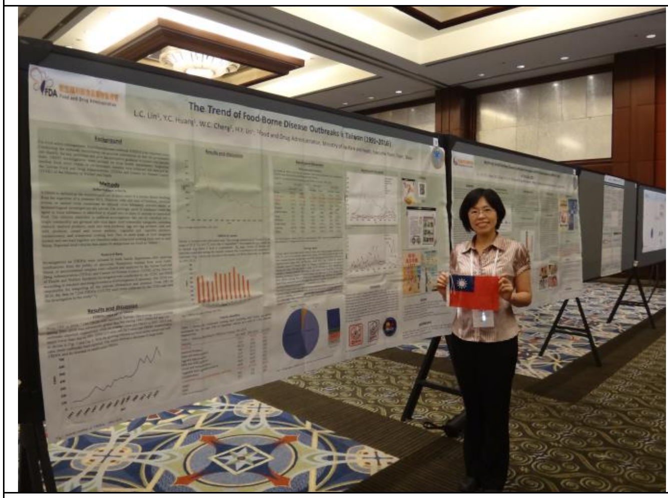
The data of this study were collected from TFDA and TCDC. Their sincere support is greatly appreciated.

四、照片(含本署海報展示實際展示與美國官員專家合照)



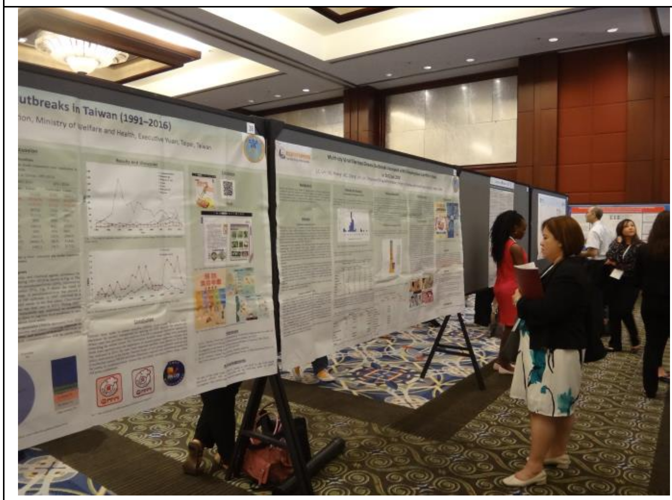
圖一、Board 38，本署第一篇論文。

圖二、Board 39，本署第二篇論文。

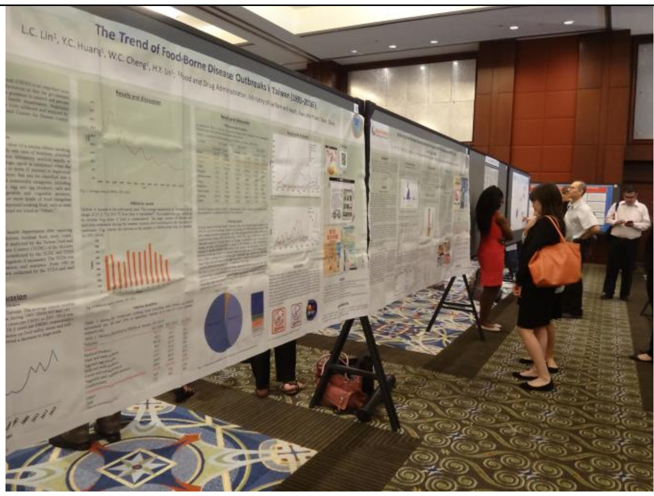


圖三、筆者與本署兩篇論文。

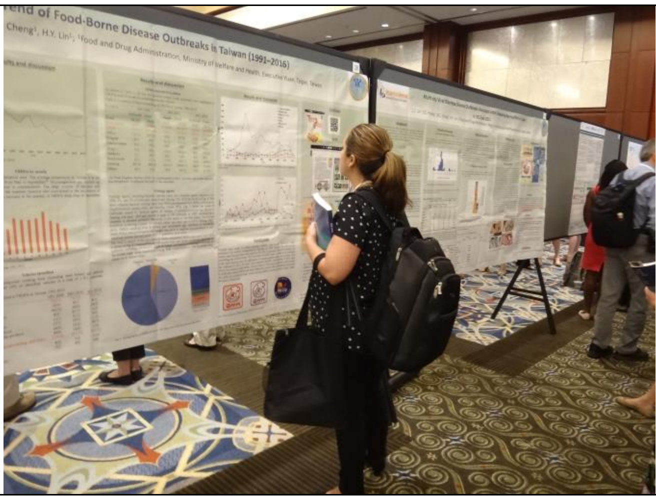
圖四、與會者討論及拍下本署論文內容。



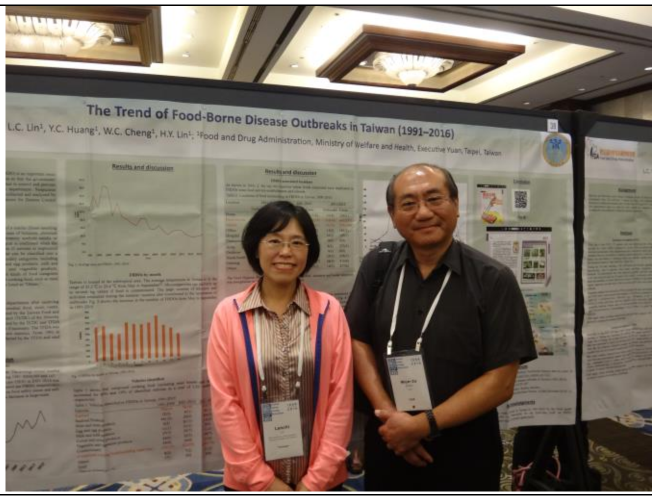
圖五、與會者閱讀本署海報論文內容。



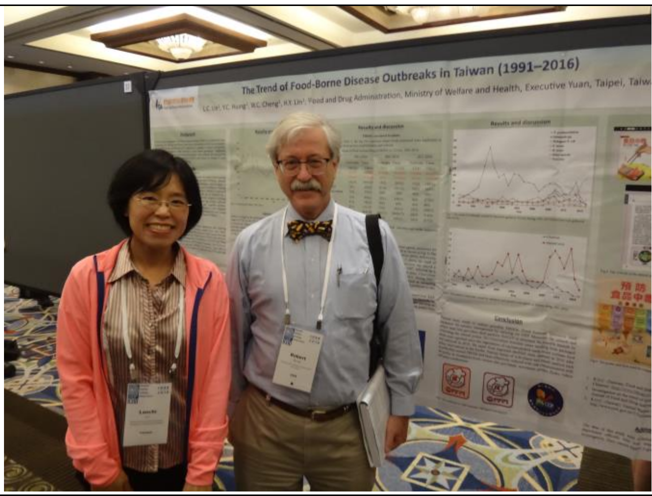
圖六、與會者閱讀本署海報論文內容。



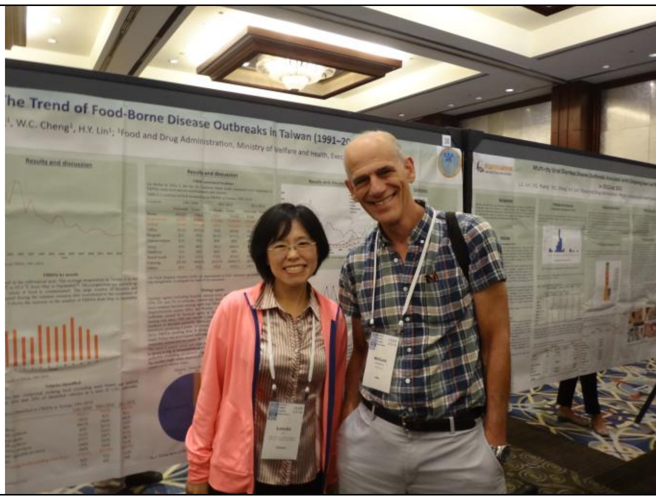
圖七、與會者閱讀本署海報論文內容。



圖八、美國 CDC 謝文儒博士閱讀及討論本署論文內容，並與筆者合影。



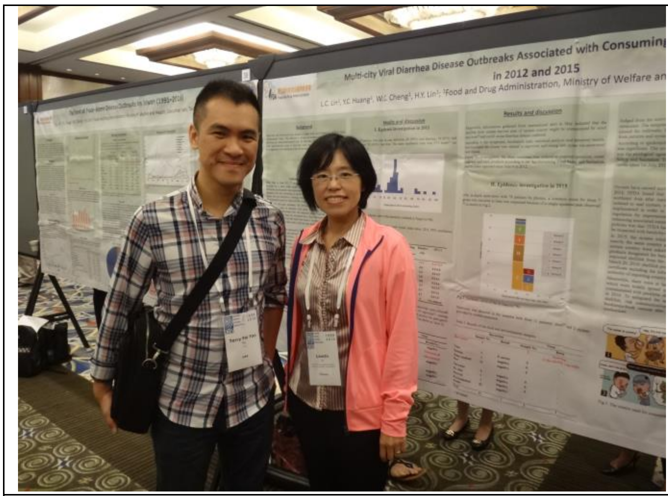
圖九、美國 CDC 負責食媒性傳染疾病單位之 director， Dr. Robert V. Tauxe 閱讀及討論本署論文內容，並與筆者合影。



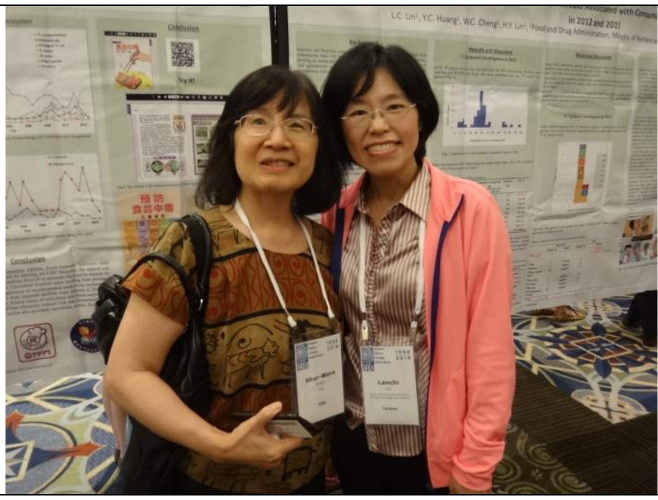
圖十、美國紐約 Wadsworth Center / NYSDOH, Division of Infectious Diseases 的 Dr. William Wolfgang 閱讀及討論本署論文內容，並與筆者合影。

圖十一、Dr. William Wolfgang 讚揚本署之宣導內容。

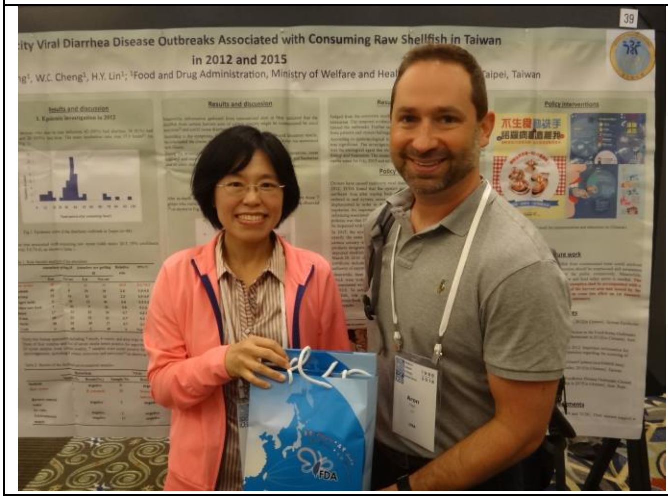
圖十二、美國 CDC Dr. Jeniffer Concepción-Acevedo 閱讀及討論本署論文內容，並與筆者合影。



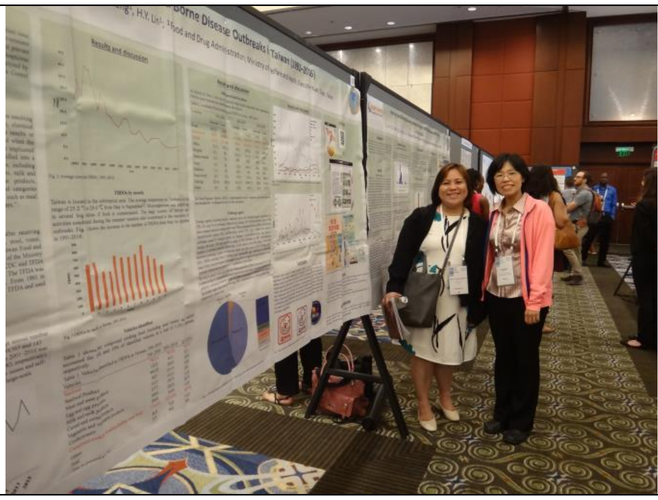
圖十三、美國 CDC Dr. Terry Fei Fan Ng 閱讀及討論本署論文內容，並與筆者合影。



圖十四、美國 CDC Dr. Shur-Wern Wang Chern 閱讀及討論本署論文內容，並與筆者合影。



圖十五、美國 CDC Dr. Aron J. Hall 閱讀及討論本署論文內容，並建議我國未來調查可精進方向。筆者致贈紀念品並與其合影。



圖十六、菲律賓學者閱讀及討論本署論文內容，並與筆者合影。

圖十七、與中國 CDC 靳博士(右)及賓州大學教授(左)討論諾羅病毒在中國流行趨勢。

圖十八、筆者與美國 FDA Dr. Heather Tate 討論 CIDT，並合影留念。

圖十九、會場展示各種致病微生物模型，相當有趣。

圖二十、筆者於正式會議前拜訪美國 CDC 亞特蘭大總部。

圖二十一、參觀 David J. Sencer CDC museum，簡介傳染性疾病對人類影響及如何預防。

圖二十二、CDC 以時序及流程方式說明食媒性傳染疾病調查步驟及方式，淺顯易懂。