

APPENDICES

Appendix-I

Risk positive patient () Risk negative patient()

No.....

Hospital..... H.N.A.N.....

Date of admission.....Departure date.....

Result of treatment ()cure () dead () refer

Type of patient () outpatient () inpatient

Hospitalward.....

1.Demographic data

Name-surmane age

gender () male () female occupation

Hometown No..... village..... Tambon.....

Amphur.....

Province.....

Ill place No..... Village..... Tambon.....

Amphur.....

Province.....

(at least stay in the location more than for 14 days)

2. Epidemiological Factors Engage to these factors in the past 15 days before admission

() have () do not have

Mark (X) in the respective box

Epidemiological factors	Did	Did not
Water Contact		
1. Plowing more than 6 hours per day		
2. Plowinghours a day		
3. Pulling out sprout more than 6 hours per day		
4. Pulling out sprouthours a day		
5. Fertilizer and caring more than 6 hours per day		
6. Fertilizer and caringhours per day		
7. Walking through water or mud more than 6 hours per day		
8. Walking through water or mudhours a day		
9. Swimming or fishing more than 6 hours per day		
10. Swimming or fishing hours a day		
11. Cleaning the sewage system more than 6 hours per day		
12. Cleaning the sewage systemper day		
13. Wound which contact to mud or water		
14. Feeding animals		
15. Butchering		
16. Working with the animals		

17. Direct contact with animal		
18. Drinking water in the river		
19. Eating remnant food		
20. Drinking unboiled water		

3. Lepto Dipstick assay

3. Date blood drawn for lepto Dipstrip 1st..... titer

4. Date blood drawn for lepto Dipstrip 1st..... titer

Appendix - II

Data master sheet (sample) For the analysis of data compiled from questionnaire checklists (appendix-I)

Identify	Demographic data				Epidemiological Factors				Dipstick assay results	
	D1	D2	D3	Ds	E1	E2	E3	Es	L1	L2
R1										
R2										
Rs										
%										

Remarks:

R1 – Rs = Number of risk positive patient, C1 – Cs = Number of risk negative patient

Variables

D1 – Ds = action of define variable in category of demographic data

E1 – Es = action of define variable in category of epidemiological

L1 – Ls = action of define variable in category of laboratory results

Identify	Demographic data				Epidemiological Factors				Dipstick assay results	
	D1	D2	D3	Ds	E1	E2	E3	Es	L1	L2
C1										
C2										
C3										
Cs										
%										

Remarks:

R1 – Rs = Number of risk positive patient, C1 – Cs = Number of risk negative patient

Variables

D1 – Ds = action of define variable in category of demographic data

E1 – Es = action of define variable in category of epidemiological factors

L1 – Ls = action of define variable in category of laboratory results

Appendix - III**Health profiles of the study province (1997)****Nakhon Ratchasima province, Northeastern region, Thailand.**

1. Area 20,548.16 sq km (12,842,600 rai)

agricultural area 8,598,177 rai (67%)

total rainfall average 893.8 ml

Height 200 – 300 meter above the sea

30 districts

289 subdistricts (Tambon)

3,288 villages

2. Population 2,518,769

351,518 household

male 1,247,422

female 1,271,347

15 years 1,756,157

Income 25,532 bahts/person/year

3. Health facilities**Government**

Regional hospital 1 (1,005 beds)

Mental hospital 1 (300 beds)

Military hospital 1 (400 beds)

Airport hospital 1 (30 beds)

Community hospital 1 (120 beds)

Community hospital 4 (90 beds)

Community hospital 4 (60 beds)

Community hospital 13 (30 beds)

Community hospital 2 (10 beds)

Health center 334

Village health center 2

Urban health center 2

Private

Private hospital 11

Private clinic 117

Private dental clinic 40

Private gynecology center 165

Private laboratory center 3

Private physical therapy center 1

Drug store 326

4. Health personnel

Physician 30734,256

Dentist 53

Pharmacist 78

Nurse 1,262

Village health volunteers

Appendix - IV

Patient suspected leptospirosis by district, Nakhon Ratchasima province, 1996 – 2000.

No	District	Population	1996		1997		1998		1999		2000	
			No	Rate	No	Rate	No	Rate	No	Rate	No	Rate
1.	Muang	436,273	4	0.91	11	2.52	4	0.91	7	1.60	2	0.49
2.	Kon Buri	92,430	2	2.16	5	5.41	28	30.29	39	42.19	4	4.33
3.	Sernsang	63,536	0	0	2	3.15	12	18.89	27	42.50	3	4.72
4.	Kong	89,839	0	0	1	1.11	2	2.23	2	2.23	0	0
5.	Ban Leum	22,536	1	4.44	0	0	0	0	1	4.44	1	4.44
6.	Jakkarad	100,048	0	0	2	1.99	0	0	26	25.99	2	1.99
7.	Chokchai	69,824	2	2.86	2	2.86	5	7.16	7	10.03	3	4.29
8.	Dan khuntod	122,381	0	0	5	4.08	4	3.27	14	11.44	8	6.54
9.	Non Thai	69,223	0	0	3	4.34	1	1.44	5	7.22	0	0
10.	Non Song	122,416	0	0	2	1.64	0	0	7	5.72	5	4.08

No.	District	Population	1996		1997		1998		1999		2000	
			No	Rate	No	Rate	No	Rate	No	Rate	No	Rate
11.	Kham Sakaesang	38,625	0	0	1	2.59	0	0	0	0	1	2.59
12.	Bua Yai	135,527	0	0	1	0.73	4	2.95	9	6.64	8	5.90
13.	Pra Tai	78,646	0	0	3	0	1	1.27	17	21.62	0	0
14.	Pak Thong Chai	104,333	1	0.96	1	0.96	0	0	0	0	0	0
15.	Pimai	128,477	1	0.78	4	3.11	3	2.34	4	3.11	3	3.11
16.	Hua Thalang	65,734	53	80.63	8	12.17	11	16.73	72	109.5	6	9.13
17.	Chum Puang	110,330	4	3.63	5	4.53	12	10.88	26	23.57	8	7.26
18.	Song Nean	71,112	3	4.21	6	8.43	8	11.25	22	30.94	1	1.40
19.	Kham Thale Saw	27,726	0	0	0	0	0	0	3	10.82	0	0
20.	Sri Kute	119,944	2	1.66	1	0.83	5	4.17	9	7.50	2	1.66
21.	Pak Chong	170,571	0	0	4	2.35	0	0	6	3.52	3	1.76
22.	Nong Bunnak	53,779	49	91.1	22	40.9	8	14.88	20	3.71	2	3.72

No.	District	Population	1996		1997		1998		1999		2000	
			No	Rate	No	Rate	No	Rate	No	rate	No	rate
23.	Kang Sanamnang	39,589	0	0	2	5.05	0	0	28	7.07	14	3.54
24.	Non Dang	24,669	0	0	1	4.05	0	0	1	4.05	0	0
25.	Wang Nam Kheal	38,988	1	2.56	0	0	0	0	0	0	4	10.24
26.	King Muang Yang*	27,633	0	0	4	14.48	2	7.24	16	57.84	8	28.96
27.	King Teparak*	22,371	1	4.47	1	4.47	1	4.47	4	17.88	3	13.41
28.	King Lam Tamenchai	30,065	0	0	0	0	2	6.65	21	69.85	8	26.61
29.	King Pratongkum	42,144	0	0	0	0	2	4.75	1	2.37	2	4.75
30.	Cha Lerm Pra Keit	NA	0	0	0	0	1	NA	3	NA	3	NA
	Total	2,518,769	124	4.92	97	3.85	116	4.61	397	15.76	104	4.13

Publications :**Abstract :**

1. Phusuksombat P, **Tangkanakul W**, Kingnate D. **Reemergence of Leptospirosis in Thailand, 1998.** (Proceedings of the Ninth Asia Pacific Military Medicine Conference. 7-12 March 1999, Central Grand Plaza Hotel. Bangkok 1999.)
2. **Tangkanakul W**, Tharmaphornpilas P. **Food poisoning outbreak from an illegal fishball factory** (Proceedings of the the Global Meeting INCLEN XVI in Bangkok, Thailand, March 1-5, 1999.)
3. **Tangkanakul W**, Tharmaphornpilas P. **Localized outbreak of influenza A virus in a hilltribe village, Thailand 1997** (Proceedings of the Global Meeting INCLEN XVI in Bangkok, Thailand, March 1-5, 1999.)
4. Discussant for **The deadly drain: Proable hydrogen sulfide poisoning in a bathroom stall.** Mohammed Al-Mozroa (presented at the Global Meeting INCLEN XVI in Bangkok, Thailand, March 1-5, 1999.)
5. Wangrongsarb P, **Tangkanakul W.** **Country Report : Epidemiology of Leptospirosis in Thailand.** (Proceedings of the Seminar - Workshop on Leptospirosis in Manila, Philippines, January 21 - 22, 2000.
6. **Tangkanakul, W.**, D.A.Ashford, P. Tharmaphornpilas, BD Plikaylis, D. Phulsuksombati, P. Choomkasien and D. Kingnate. **Risk factors associated with leptospirosis infection among north-eastern Thai villages.** (Proceedings of the TEPHINET 2000, First International Conference in Ottawa, Canada 17 - 21 April, 2000) .

7. **Tangkanakul, W. Situation of leptospirosis in Thailand.** Proceedings of the 41st Annual Conference of Chulalongkorn University, 2000.
8. Pool T N, **Tangkanakul W**, Gary L. Andersen. **Veterinary component medcaps in hostile environments.** (Proceedings of the Tenth Asia Pacific Military Medicine Conference. 7-12 May 2000, Marina Mandarin Hotel. Singapore, 2000.).
9. Phulsuksombati D, Sangjun N, Khoprasert Y, Suwanjaroen D, **Tangkanakul W.** **Situation of leptospirosis in Thailand & survey of *Leptospira* in major reservoirs.** (Proceedings of the Tenth Asia Pacific Military Medicine Conference. 7-12 May 2000, Marina Mandarin Hotel. Singapore, 2000.).
10. **Tangkanakul W**, Tharmaphornpil P, Plikaylis B D, Poonsuksombat D, Choomkasien P, Kingnate D, Ashford DA. **Risk factors associated with leptospirosis infection in northeastern Thailand, 1998.** (Proceedings of the International Conference of Emerging Infectious Disease, 2000 (ICEID2000). 16-19 July 2000, the Atlanta Marriott Marquis, 2000.).
11. Suwancharoen D, Indrakamhang P, Neramitmansook P, **Tangkanakul W.** **Serological survey of *leptospira* antibody in livestock in 5 northeastern provinces, 1999**(Proceedings of the Conference of 17th Department of Animal Science, 28-30 August 2000, the Prince Palace Hotel, Bangkok, 2000.).
12. **Tangkanakul W**, Naigowit P, Smithsuwan P, Kaewmalang P, Khoprasert Y, Phulsuksombati D, Chunsuttiwat S. **Prevalence of asymptomatic leptospirosis among high risk group, 1998.** (Proceedings of the Global Meeting INCLIN XVII in Bangkok, Thailand, October 15-18, 2000.)

13. **Tangkanakul W, Ungchusak K, Siriarayaporn P, Choomkasien P, Chunsuttiwat S. Environmental and travel factors related to leptospirosis among northeastern Thai villagers, 1998.** (Proceedings of the Global Meeting INCLEN XVII in Bangkok, Thailand, October 15-18, 2000.)

Paper:

1. **Tangkanakul W, Kingnate D. Leptospirosis epidemic in northeastern provinces, 1997.**(a review) *Journal of Health Science* 1998; 7(3): 386 -95.
2. **Tangkanakul W, Tharmaphornpilas P. Epidemiology of *Haemophilus Influenzae* type b in Thailand.**(a review) *Journal of Health Science* 1998; 7(4): 571-81.
3. **Tangkanakul W, Tharmaphornpilas P, Songpun Aimbudlup. The Cholera outbreak in Chumporn .** *Journal of Health Science* 1999; 8(3): 332-8.
4. **Poonsuksombat D., Tangkanakul W., Sangjun N., Kingnate D., Khoprasert Y., Hamarit K.. Isolation of leptospirosis from wild rodent in Thailand, 1998.** *Journal of Health Science* 1999; 8(3): 360-9.
5. **Tangkanakul W, Tharmaphornpilas P, Datapon D, Sutantayawalee S. Food poisoning outbreak from contaminated fishballs.** *J Med Assoc Thai* 2000; 83 (11) : 1289 - 1295.
6. **Tangkanakul W, Tharmaphornpilas P, Thawatsupha P, Laolukpong P, Lertmongkol J. An Outbreak of Influenza A Virus in a Hilltribe Village of Maehongson Province Thailand, 1997.** *J Med Assoc Thai* 2000; 83(9) : 1005 - 1010.

7. **Tangkanakul W**, Yangkao K, Sroysranoi N, Suthinon C, Smithsuwan P, Choomkasien P, Kaewmalang P. **Risk factors associated with leptospirosis infection among north-eastern Thai villages.** Journal of Health Science 1999; 8 (3): 351-9.
8. **Tangkanakul W** , Naigowit P, Smithsuwan P, Kaewmalang P, Khoprasert Y, Phulsuksombati D. **Prevalence of Asymptomatic Leptospirosis Infection among High Risk Group 1998.** Journal of Health Science 2000; 9(1) : 56 – 62.
9. Nitatpattana N, Chauvancy G, Dardaine J, Jumronsawat K, **Tangkanakul W**, Poonsuksombat D, Yoksan S, Gonzalez JP. **Serological study of hantavirus in the rodent population of Nakhon Pathom and Nakorn Ratchasima province Thailand.** Southeast Asian J Trop Med Public Health 2000; 31(2) : 277 – 82.
10. **Tangkanakul W**, P. Tharmaphornpilas, BD Plikaylis, D. Phulsuksombati, P. Choomkasien, D. Kingnate, and D.A. Ashford. **Risk factors associated with leptospirosis infection in northeastern Thailand, 1998.** Am. J. Trop. Med. Hyg. (in press)
11. **Tangkanakul W**, Yangkao K. **Prevention and Control of Leptospirosis.** The NorthEastern Regional Epidemiology J 2000; 5(1): 27 - 33.
12. **Tangkanakul W.** **Cholera Control.** Journal of Health Science 1999; 8(4): 575 - 8.
13. **Tangkanakul W**, Suttinont C. **Leptospirosis Suspects and Immunological Evaluation.** Journal of Health Science 2000; 9(4): 532 – 7.
14. **Tangkanakul W.** **Epidemiology and clinical manifestation of Leptospirosis.** The NorthEastern Regional Epidemiology J 2000; 5(2): 7 - 19.

15. **Tangkanakul W, Chaichana S, Hamari G, Yangkao K, Ungchusak K, Chunsuttiwat S. Geographic Relation to *Leptospira* Infection in Wild Rodents and Patients.** Journal of Health Science 2000; 9(4): 524 – 31.
16. **Pasarj S, Tangkanakul W, Wanichapol S, Chunsuttiwat S. Leptospirosis in Sakon Nakhon Province, 2000.** Journal of Health Science 2000; 9(4): 538 – 43.
17. **Wanichapol S, Pasarj S, Tangkanakul W. Clinical manifestation of leptospirosis in Sakon Nakorn, 2000.** The NorthEastern Regional Epidemiology J 2000; 5(3): 20 -5.
18. **Pornsiripongse S, Muangkliang R, Usuparat P, Tangkanakul W, Kingnate D, Chanposri D, Chunsuttiwat S. Knowledge about Leptospirosis among High Risk Group.** Journal of Health Science 2001; inpress.
19. **Pornsiripongse S, Muangkliang R, Usuparat P, Tangkanakul W, Kingnate D, Chanposri D, Chunsuttiwat S. Life-ways that Create Risk of Leptospirosis Infection in Nakhon Ratchasima Province.** Journal of Health Science 2001; inpress.

Curriculum Vitae

Name : Waraluk Tangkanakul

Title: Medical officer

Nationality : Thai

Education :

1987-1993 : Faculty of Medicine, Srinakharinwirot University(Diploma of Medicine)

25-27/10/1993 : Ramathibodi hospital, Mahidol University, Bangkok, Thailand
Certificate in Cardiology

28/11 - 9/12/1994 : Vachira hospital, Bangkok, Thailand Certificate in general
practitioner

1997-1999 : Resident training in Epidemiology, Field Epidemiology Training
Program (Certificate)

Employment :

1993-1996 : General Physician, Pangkon community Hospital, Sakolnakhon

1996-1997 : General Physician Nonthaburi provincial Hospital, Nonthaburi

1999 : Medical staff, Division of General Communicable Diseases, Department of
Communicable Disease Control, Ministry of Public Health, Bangkok

Entered : January 2000

Final Oral Exam: 15 December 2000

Sponsor: World Health Organization

Thesis title: The Prevalence and Risk Ratio of Patients Suspected of Having
Leptospirosis