CHAPTER IV

RESEARCH RESULTS

Data Analysis Outcome

The results of the research are presented in 6 parts, as follows:

Part 1: Patient Characteristics;

Part 2: Health center Characteristics;

Part 3: Characteristics by sub-district (tumbol);

Part 4: Characteristics by month;

Part 5: Quality of data in surveillance report;

Part 6: Interrelationships of surveillance data quality with patient characteristics, health center characteristics, subdistrict, and month.

Part 1: Patient Characteristics

These general information of patient characteristics e.g. gender, age, occupation, diseases / diagnosis will consider all of the report forms 506 that the District Public Health Office received from health centers in Muang District for one year, starting January 1, 2004, and ending December 31, 2004. During this year, a total of 831 report forms were received at the District Health Office from the 25 local health centers in the district. Among these, 47.2% of patients were male and 52.8% were female, 46.5% were 0-10 years old, and 63.2% were sick with diarrhea.

Table 1: Patient characteristics (frequencies and percentages).

Characteristic	Frequency (831)	Percentage
Gender		
Male	392	47.2
Female	439	52.8
Age Group		
0-4	246	29.6
5-9	129	15.5
10-19	114	13.7
20-34	114	13.7
35-54	125	15
55 Up	102	12.3
Total	830	99.9
Missing	1	0.1
Mean = 22.02, S.D. = 22.97, Minimum = 0.0027, Maximum = 92.00		
Occupation		
Agriculture	116	14
Government	13	1.6
Worker	98	11.8
Commercial	14	1.7
Homeworker	24	2.9
Student	123	14.8
Fishfarmer/Fisherman	3	0.4
Other	100	12
Child	336	40.4
Animal farmer	1	0.1
Religious	3	0.4
Disease / Diagnosis (ordered by diagnosis code)		
Diarrhea	525	63.2
Food poisoning	20	2.4

Table 1: Patient characteristics (frequencies and percentages). (Cont.)

Characteristic	Frequency (831)	Percentage
Dysentery unspecified	5	0.6
Bacillary dysentery	4	0.5
Amoebic dysentery	1	0.1
Enteric fever	1	0.1
Typhoid	1	0.1
Haemorrhagic conjunctivitis	64	7.7
Influenza	25	3.0
Chicken pox	70	8.4
Fever of unknown origin	22	2.6
Measles	9	1.1
Measles with complication	1	0.1
Hemorrhagic fever	2	0.2
Malaria	3	0.4
Pneumonia	23	2.8
Pulmonary TB	2	0.2
Lymphogranuloma	5	0.6
Rabies	1	0.1
Leptospirosis	4	0.5
Scrub Typhus	1	0.1
Mumps	34	4.1
Dengue fever	6	0.7
Herpes zoster	2	0.2
Total	831	100.0

Part 2: Health center Characteristics

General Information of health center personnel responsible for completing report from 506 52.0% had gender is male, marital status is married 76.0%. All 25 persons responsible for completing epidemiology forms had bachelor's degrees, the period of time have been working in the Ministry of Public Health 8-29 years, the period of time responsibility for completing and sending report forms 506 is 2-10 years, 60% not ever been trained in the epidemiologic surveillance reporting systems. The average income was 14,606 Baht per month. In health center has used the computer to process the data on Epidemiologic Surveillance and method in submitting report forms 506 by floppy disk is only 36.0%. Supporting activities in implementation and receiving supervision on epidemiology from Health district 56.0% and transportation and communication system is good 76.0%.

Table 2: Characteristics of persons responsible for completing epidemiology forms

General Information	Frequency (25)	Percentage
Gender		
Male	13	52.0
Female	12	48.0
Age		
< 30	2	8.0
31- 35	11	44.0
36 40	7	26.0
41 - 45	2	8.0
46 >	3	12.0
(Mean = 36.52, S.D. = 6.545, Minimum = 29, Maximum = 55)		
Marital Status		
Single	6	24.0
Married	19	76.0
The Highest Educational Certificate in Public Health		
Bachelor	25	100.0
Working position		
Community Public Health Official	9	36.0
Public Health Administrative Official	3	12.0
Public Health Academic	13	52.0
The period of time you have been working in the Ministry of Public Health (Years)		
5 - 10	4	16.0
11 - 15	12	48.0
16 - 20	6	24.0
21 - 25	2	8.0
26 >	1	4.0
(Mean = 14.72, S.D. = 5.054, Minimum = 8, Maximum = 29)		
The period of time you have responsibility for completing and sending Report from 506(Years)		
0 - 5	15	60.0
6 - 10	10	40.0
(Mean = 5.44, S.D. = 2.663, Minimum = 2, Maximum = 10)		

Table 2: Characteristics of persons responsible for completing epidemiology forms(Cont.)

General Information	Frequency (25)	Percentage
Have you ever been trained in the epidemiologic surveillance reporting systems		
Yes	10	40.0
No	15	60.0
Has this Health Station used the computer to process the data on Epidemiologic Surveillance		
Yes (submit report by floppy disk)	9	36.0
No (submit report as paper copy)	16	64.0
Monthly income (Baht)		
<10000	6	24.0
10000-15000	8	32.0
15001-20000	8	32.0
>20000	3	12.0
Mean = 14606.80, S.D. = 4485.11, Minimum = 8870, Maximum = 25180		
Birth place		
In this district	11	44.0
Other district	14	56.0
Supporting activities in implementation		
Yes	14	56.0
No	11	44.0
Receiving supervision on epidemiology		
Yes	14	56.0
No	11	44.0
Transportation and communication		
Good	19	76.0
Poor	6	24.0

Table 3: Number and percentage of health center personnel responding correctly to questions on knowledge regarding epidemiology reporting

Statement	Number	Percentage
1. The promptness of sending report forms 506 is counted on the date when the patient comes to the Health Station for service.	22	88.0
2. If a patient suffers from 2 Epidemiologic diseases at the same time for example Malaria and Diarrhea, how should you write form 506?	17	68.0
3. When a patient suffers from measles and Diarrhea, how will you write form 506?	18	72.0
4. How to write a patient's name?	15	60.0
5. If you find any diseases, other than printed on form 506, occurring inordinately a lot for example Triangular open wound, how will you write form 506?	19	76.0
6. When there is a patient, aged 17, with acute muscle fatigue coming to the Health Station, how will you treat his data?	17	68.0
7. Disease Code 65 in report from 506 refers to which disease?	12	48.0
8. Health station must collect report forms 506 and submit then to District Public Health Office every end of the month.	18	72.0
9. A patient who has taken insecticide to commit suicide comes for treatment at Health Station; there is no need to write report from 506 Card.	6	24.0
10. In physical check-up service at school, when a student is found to be sick from the disease under Epidemiologic Surveillance, there is no need to record in form 506.	20	80.0

Table 3: Number and percentage of health center personnel responding correctly to questions on knowledge regarding epidemiology reporting (Cont.)

Statement	Number	Percentage
11. On finding a patient allergic to insecticide coming for treatment at Health Station, there is no need to write form 506.	10	40.0
12. A patient suffers from more than one disease under Epidemiologic Surveillance at the some time, write only one form 506.	18	72.0
13. When a patient who has taken poisonous mushroom comes for treatment at Health Station, writing report from 506 is needed.	19	64.0
14. When you find the HIV-positive patient, you must write report from 506 immediately.	18	72.0
15. The date starting to get sick and the date that a patient is found can be considered the same because there is no difference in Epidemiologic Surveillance.	17	68.0

As shown in table 3; questions on knowledge regarding epidemiology reporting health centers responding correctly was highest in question 1 (88.0%) and question 10 (80.0%), and lowest in question 9 (24.0%).

Table 4: Number and percentage of health center by knowledge on epidemiology reporting

Health center (ordered by code number)	Points (max 15)	Percentage
Pangnakhon	10	66.7
Bangkrabue	13	86.7
Kokkoy	9	60.0
Watmukkatara	10	66.7
Plytar	10	66.7
Yanser	10	66.7
Nongbor	4	26.7
Mamungsongton	12	80.0
Ymegyotala	9	60.0
Tongnod	12	80.0
Kokting	11	73.3
Taham	8	53.3
Paryang	10	66.7
Yanyera	13	86.7
Tongyar	12	80.0
Bangjak	6	40.0
Bangyai	5	33.3
Pangpoon	4	26.7
Salabangpoo	12	80.0
Pangpaya	10	66.7
Nawong	11	73.3
Maidang	10	66.7
Pungsig	11	73.3
Banchang	11	73.3
Hnongnon	10	66.7

Mean of correct answers = 9.72, S.D. = 2.54, Minimum = 4 Maximum = 13

As shown in table 5, 60.0% of health centers had moderate knowledge regarding epidemiology, while 16.0% had poor knowledge.

Table 5: Number and percentage of health center by level of knowledge on epidemiology

Level of Knowledge	Number (n = 25)	Percentage
Good (80%-100%)	6	24.0
Moderate (50-79.99)	15	60.0
Poor (0-49.99)	4	16.0
Total	25	100.0

Mean percentage of correct answers = 64.80, Median = 66.67, S.D. = 16.94, Minimum = 26.67, Maximum = 86.67

Table 6: Number and percentage of health center by attitudes towards epidemiology reporting.

Statement	Attitude level: number (%)					Mean
	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree	
1. Making report from 506 takes a lot of time. N*	1 (4)	4 (16)	3 (12)	16 (64)	1 (4)	3.48
2. Making report from 506 has difficult steps. This makes you feel desperate. N*	0 (0)	4 (16)	2 (8)	15 (60)	4 (16)	3.76
3. Making report from 506 has no effect on epidemiologic control. N*	0 (0)	2 (8)	5 (20)	14 (56)	4 (16)	3.80
4. Making report from 506 bring you broad knowledge	0 (0)	4 (16)	5 (20)	14 (56)	2 (8)	3.56
5. You feel glad to continue doing this job.	0 (0)	3 (12)	2 (8)	19 (76)	1 (4)	3.72
6. Making report from 506 causes you to work more carefully and deliberately.	0 (0)	2 (8)	6 (24)	15 (60)	2 (8)	3.68
7. You cannot make use of form 506. N*	0 (0)	2 (8)	1 (4)	19 (76)	3 (12)	3.92
8. Data from report from 506 only little use as Public Health Work Report Presentation. N*	0 (0)	2 (8)	0 (0)	18 (72)	5 (20)	4.04
9. Making report from 506 brings about the data that can be largely used to develop Public Health Work.	0 (0)	1 (4)	3 (12)	18 (72)	3 (12)	3.92

Table 6: Number and percentage of health center by attitudes towards epidemiology reporting (Cont.).

Statement	Attitude level: number (%)					Mean
	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree	
10. My colleagues don't help me in making report form 506. N*	0 (0)	6 (24)	3 (12)	15 (60)	1 (4)	3.44
11. Making report from 506 eases you to be more enthusiastic in working for Community Public Health. N*	0 (0)	3 (12)	9 (36)	13 (52)	0 (0)	3.40
12. Data from report from 506 can be used to plan Public Health Work.	1 (4)	0 (0)	1 (4)	19 (76)	4 (16)	4.00
13. The person who completes the report from 506 can make good use of it in his/her work.	0 (0)	2 (8)	3 (12)	16 (64)	4 (16)	3.88
14. I would like report from 506 to be quit in order to reduce the Public Health staff's burden in Health Station. N*	1(4)	1(4)	6(24)	14 (56)	3 (12)	3.68
15. Making report from 506 takes a lot of time, which should be spent on serving the people. N*	1 (4)	2 (8)	1 (4)	19 (76)	2 (8)	3.76

N* denotes negative question. In negative questions, "strongly disagree" (level 1) is poorest attitude. In positive questions, "strongly agree" (level 5) is poorest attitude.

Table 7: Number and percentage of health center by Attitude on epidemiology

Health center	Points (Max 75)	Percentage
Pangnakhon	49	65.3
Bangkrabue	60	80.0
Kokkoy	64	85.3
Watmukkatara	56	74.7
Plytar	58	77.3
Yanser	58	77.3
Nongbor	58	77.3
Mamungsongton	61	81.3
Ymegyotala	52	69.3
Tongnod	66	88.0
Kokting	59	78.7
Taham	51	68.0
Paryang	61	81.3
Yanyera	56	74.7
Tongyar	57	76.0
Bangjak	61	81.3
Bangyai	39	52.0
Pangpoon	49	65.3
Salabangpoo	55	73.3
Pangpaya	41	54.7
Nawong	48	64.0
Maidang	60	80.0
Pungsig	58	77.3
Banchang	64	85.3
Hnongnon	60	80.0

Mean = 56.04, Median = 58.00, S.D. = 6.755, Minimum = 39 Maximum = 66

As shown in table 8, 64.0% of health centers had moderate attitudes towards to attitudes on epidemiology, while 36.00% had good knowledge.

Table 8: Number and percentage of health centers by level of attitudes towards epidemiology

Level of attitude	Number (n = 25)	Percentage
Good (80%-100%)	9	36.0
Moderate (50-79.99)	16	64.0
Poor (0-49.99)	0	0.0
Total	25	100.0

Mean = 74.72, Median = 77.33, S.D. = 9.01, Minimum = 52.00, Maximum = 88.00

Part 3: Characteristics by sub-district (tumbol)

Table 9: Number and percentage of subdistricts by completeness of report forms 506.

Sub-district (number of health centers)	Total reportable diagnoses	No. Of Sent report form 506		
		Total	Complete	Percentage of all diagnoses
Tarrai (2)	68	23	22	32.4
Pangnakhon (2)	109	66	61	56.0
Plytar (1)	62	45	41	66.7
Yansear (1)	35	18	17	48.6
Hnongbor (1)	37	21	20	54.1
Mamungsongton (1)	52	15	15	28.8
Nakhean (2)	142	131	131	92.2
Tarhew (3)	122	82	76	62.3
Posaded (2)	73	43	39	53.4
Bangjak (2)	189	177	171	90.5
Pangpoon (2)	128	67	60	46.9
Tarsag (2)	119	78	75	63.0
Tarrear (4)	162	66	58	35.8
Total	1,298	831	786	60.6

As shown in table 10, 46.1% of sub-districts had moderate completeness, while 38.5% had poor and 15.4% had good completeness.

Table 10: Number and percentage of sub-districts by level of completeness of report forms 506.

Level of completeness	Number(n = 13)	Percentage
Good (80%-100%)	2	15.4
Moderate (50-79.99)	6	46.1
Poor (0-49.99)	5	38.5
Total	13	100.0

Mean = 56.20, Median = 54.04, S.D. = 19.48, Minimum = 28.8, Maximum = 92.2

Table 11: Number and percentage of sub districts by overall accuracy of report forms 506.

Subdistrict	Number Of 506	No. Of Sent report form 506	
		Accurate	Percentage
Tarrai	23	6	26.1
Pangnakhon	66	29	43.9
Plytar	45	21	46.7
Yansear	18	8	44.4
Hnongbor	21	7	33.3
Mamungsongton	15	0	00.0
Nakhean	130	82	63.1
Tarhew	82	16	19.5
Posaded	43	9	20.9
Bangjak	177	64	36.2
Pangpoon	67	30	44.8
Tarsag	78	34	43.6
Tarrear	66	21	31.8
Total	831	327	39.4

As shown in table 12; 92.3% of sub-district had moderate overall accuracy, while 7.7% had poor accuracy.

Table 12: Number and percentage of sub-districts by level of overall accuracy report forms 506.

Level of overall accuracy	Number (n = 13)	Percentage
Good (80%-100%)	0	0.0
Moderate (50-79.99)	12	92.3
Poor (0-49.99)	1	7.7
Total	13	100.0

Mean =34.95, Median = 36.16, S.D. = 15.86, Minimum = 0.00, Maximum = 63.10

Table 13: Number and percentage of sub-districts by promptness of report forms 506.

Sub-district	No. Of Sent report form 506	Forms Sent Promptly	
		Number	Percentage
Tarrai	23	18	78.3
Pangnakhon	66	37	56.1
Plytar	44	33	73.3
Yansear	18	10	55.6
Hnongbor	21	4	19.1
Mamungsongton	15	10	66.7
Nakhean	131	79	60.8
Tarhew	82	56	68.3
Posaded	43	28	65.1
Bangjak	177	130	73.5
Pangpoon	67	44	65.7
Tarsag	78	32	41.0
Tarrear	66	54	81.8
Total	831	18	64.4

As shown in table 14; 76.9% of sub-district had moderate promptness, while 15.4% had poor and 7.7% had good promptness.

Table 14: Number and percentage of sub districts by level of promptness of report forms 506.

Level of promptness	Number (n = 13)	Percentage
Good (80%-100%)	1	7.7
Moderate (50-79.99)	10	76.9
Poor (0-49.99)	2	15.4
Total	13	100.0

Mean = 61.90, Median = 65.67, S.D. =16.71, Minimum = 19.10, Maximum = 81.80

Part 4: Characteristics by month.

Table 15: Number and percentage of calendar time by completeness of report forms 506.

Month	Number Of Patient	No. Of Sent report form 506			
		Incomplete	percentage	Complete	Percentage of patients
January	99	41	41.4	58	58.6
February	128	50	39.1	78	60.9
March	142	54	38.0	88	62.0
April	81	31	38.3	50	61.7
May	158	65	41.1	93	58.9
June	141	54	38.3	87	61.7
July	114	46	40.4	68	59.6
August	115	47	40.9	68	59.1
September	87	35	40.2	52	59.8
October	90	31	34.4	59	65.6
November	59	28	47.5	31	52.5
December	84	30	35.7	54	64.3
Total	1,298	512	39.4	786	60.6

As shown in table 15; completeness was highest in October (65.6%), and lowest in the very next month (52.5%).

Table 16: Number and percentage of accurate of report forms 506, by month.

Month	Number Of 506 (N=831)	No. Of Sent report form 506	
		Accurate	Percentage
January	63	16	25.4
February	83	32	38.6
March	92	51	55.4
April	55	17	30.9
May	97	43	44.3
June	93	36	38.7
July	74	20	27.0
August	72	34	47.2
September	54	18	33.3
October	59	28	47.5
November	35	11	31.4
December	54	21	38.9
Total	831	327	39.4

As shown in table 16; 55.4% in March was the highest monthly accuracy, while 25.4% in January was the lowest.

Table 17: Number and percentage of accurate of report forms 506, by month.

Level of accuracy	Number (n = 13)	Percentage
Good (80%-100%)	0	0.0
Moderate (50-79.99)	1	8.3
Poor (0-49.99)	11	91.7
Total	12	100.0

Mean = 38.22, Median = 38.63, S.D. = 9.12, Minimum = 25.4, Maximum = 55.4

Table 18: Number and percentage of prompt of report forms 506, by month.

Month	No. Of Sent report form 506	Promptly	
		Number	Percentage
January	63	59	93.7
February	83	53	63.9
March	92	18	19.6
April	55	41	74.6
May	97	50	51.6
June	93	69	74.2
July	74	58	78.4
August	72	50	69.4
September	54	43	79.6
October	59	35	59.3
November	35	24	68.6
December	54	35	64.8
Total	831	535	64.4

Mean = 66.46, Median = 69.01, S.D. = 18.28, Minimum = 19.57, Maximum = 93.65

As shown in table 18; 93.7% in January had the highest promptness, while 19.6% in March had the lowest.

Part 5: Quality of data in surveillance report

Table 19: Number and percentage of health centers by completeness of report forms 506.

Health Centers	Number Of Patient	Complete	Percentage
Pangnakhon	43	6	14.0
Bangkrabue	25	16	64.0
Kokkoy	83	49	59.0
Watmukkatara	26	12	46.2
Plytar	62	41	66.1
Yanser	35	17	48.6
Nongbor	37	20	54.1
Mamungsongton	52	15	28.8
Ymegyotala	96	86	89.6
Tongnod	46	45	97.8
Kokting	35	23	65.7
Taham	42	27	64.3
Paryang	45	26	57.8
Yanyera	43	21	48.8
Tongyar	30	18	60.0
Bangjak	89	77	86.5
Bangyai	100	94	94.0
Pangpoon	56	19	33.9
Salabangpoo	72	41	56.9
Pangpaya	56	32	57.1
Nawong	63	43	68.3
Maidang	83	24	28.9
Pungsig	29	11	37.9
Banchang	15	7	46.7
Hnongnon	35	16	45.7
Total	1289	786	60.6

Mean = 60.65, Median = 60.00, S.D. = 20.68, Minimum = 14.0, Maximum = 97.8

As shown in table 20, 16.0% health center had good completeness; 60.0% of health center had moderate completeness, while 24.0% had poor completeness.

Table 20: Number and percentage of health centers by level of completeness of report forms 506.

Level of completeness	Number(n = 25)	Percentage
Good (80%-100%)	4	16.0
Moderate (50-79.99)	15	60.0
Poor (0-49.99)	6	24.0
Total	25	100.0

Table 21: Number and percentage of health centers by accuracy of report forms 506.

Health Centers	Number Of 506	accurate	Percentage
Pangnakhon	6	2	33.3
Bangkrabue	17	4	23.5
Kokkoy	53	21	39.6
Watmukkatara	13	8	61.5
Plytar	44	20	45.5
Yanser	18	8	44.4
Nongbor	21	7	33.3
Mamungsongton	15	0	0.0
Ymegyotala	86	45	52.3
Tongnod	45	38	84.4
Kokting	23	8	34.8
Taham	33	5	15.2
Paryang	26	3	11.5
Yanyera	22	7	31.8
Tongyar	21	2	9.5
Bangjak	80	19	23.8
Bangyai	97	45	46.4
Pangpoon	24	16	66.7
Salabangpoo	43	14	32.6
Pangpaya	35	14	40.0
Nawong	43	20	46.5
Maidang	25	5	20.0
Pungsig	13	6	46.2
Banchang	7	4	57.1
Hnongnon	21	6	28.6
Total	831	327	39.4

As shown in table 22, only one health center had good accuracy; 80% had poor and 16% had moderate accuracy.

Table 22: Number and percentage of health centers by level of accuracy of report forms 506.

Level of accuracy	Number(n = 25)	Percentage
Good (80%-100%)	1	4.0
Moderate (50-79.99)	4	16.0
Poor (0-49.99)	20	80.0
Total	25	100.0

Mean = 37.14, Median = 34.78, S.D. = 19.17, Minimum = 0.0, Maximum = 84.44

Table 23: Number and percentage of health centers by promptness of report forms 506.

Health Centers	Number Of 506	No. Of Sent report form 506	
		Prompt	Percentage
Pangnakhon	6	5	83.3
Bangkrabue	17	13	76.5
Kokkoy	53	27	50.9
Watmukkatara	13	10	76.9
Plytar	44	32	72.7
Yanser	18	10	55.6
Nongbor	21	4	19.0
Mamungsongton	15	10	66.7
Ymegyotala	86	58	67.4
Tongnod	45	22	48.9
Kokting	23	6	26.1
Taham	33	25	75.8
Paryang	26	25	96.2
Yanyera	22	14	63.6
Tongyar	21	14	66.7
Bangjak	80	70	87.5
Bangyai	97	60	61.9
Pangpoon	24	10	41.7
Salabangpoo	43	34	79.1
Pangpaya	35	12	34.3
Nawong	43	20	46.5
Maidang	25	24	96.0
Pungsig	13	8	61.5
Banchang	7	6	85.7
Hnongnon	21	16	76.2
Total	831	535	64.4

As shown in table 24, 56.0% of health center had moderate promptness, while 24.00% had good and 20% had poor.

Table 24: Number and percentage of health centers by level of promptness of report forms 506.

Level of promptness	Number(n = 25)	Percentage
Good (80%-100%)	5	20.0
Moderate (50-79.99)	14	56.0
Poor (0-49.99)	6	24.0
Total	25	100.0

Mean = 64.67, Median = 66.67, S.D. = 20.42, Minimum = 19.05, Maximum = 96.15

Table 25: Overall quality score by health centers.

Health Centers	Percentage
Pangnakhon	57.7
Bangkrabue	64.5
Kokkoy	60.0
Watmukkatara	69.2
Plytar	67.7
Yanser	60.8
Nongbor	50.4
Mamungsongton	48.9
Ymegyotala	76.2
Tongnod	82.2
Kokting	56.6
Taham	59.3
Paryang	66.4
Yanyera	58.8
Tongyar	53.1
Bangjak	72.6
Bangyai	74.8
Pangpoon	55.4
Salabangpoo	66.0
Pangpaya	55.7
Nawong	64.2
Maidang	60.2
Pungsig	57.6
Banchang	72.4
Hnongnon	56.7
Total	62.7

Overall quality in health centers ranged from 48.9% to 82.2%. As shown in table 26, only one health center had good overall quality; 92.0% of health centers had moderate overall quality.

Table 26: Number and percentage of health centers by level of Overall quality of report forms 506.

Level of Overall quality	Number (n = 25)	Percentage
Good (80%-100%)	1	4.0
Moderate (50-79.99)	23	92.0
Poor (0-49.99)	1	4.0
Total	25	100.0

Mean = 62.69, Median = 60.23, S.D. = 8.42

Part 6: Interrelationships of Patient Characteristics, Health Center Characteristics, Subdistrict, and Month, with quality of data

Interrelationships with Patient Characteristics

As shown in table 27, the patients who were female (95.7%) completeness report forms 506 somewhat more than male (93.4). This difference was not statistically significant ($p > 0.05$).

Table 27: Relationship between number of patients' gender and completeness of report forms 506.

Gender	Completeness report forms 506	
	Incompleteness Number (%)	Completeness Number (%)
Male	26 (6.6)	366 (93.4)
Female	19 (4.3)	420 (95.7)

$\chi^2 = 2.147$, $p = 0.143$, $df = 1$

As shown in table 28: the number and patients who were age group 0 - 4 (99.6%) completeness report forms 506 higher other group. This difference was statistically significant ($p<0.05$). Completeness was better for younger ages.

Table 28: Relationship between patients' age and completeness of report forms 506.

Age group	Completeness report forms 506	
	Incompletely Number (%)	Completely Number (%)
0-4	1 (0.4)	245 (99.6)
5-9	1 (0.8)	128 (99.2)
10-19	8 (7.0)	106 (93.0)
20-34	12 (10.5)	102 (89.5)
35-54	12 (9.6)	113 (90.4)
55 Up	11 (10.8)	91 (89.2)

$\chi 2 = 33.833$, $p < 0.001$, $df = 5$

As shown in table 29; the completeness rate was highest for occupation "other, including child," and differed significantly by occupational category.

Table 29: Relationship between occupation and completeness of report forms 506.

Occupation	Completeness report forms 506	
	Incomplete Number (%)	Complete Number (%)
Agriculture fish farmer Fisherman animal farmer	11 (9.2)	109 (90.8)
Worker	11 (11.2)	87 (88.8)
Student	7 (5.7)	116 (94.3)
Other, including "child"	16 (3.3)	474 (96.7)

$\chi 2 = 14.194$, $p = 0.003$, $df = 3$

As shown in table 30; there was no significant gender difference in the accuracy of report forms.

Table 30: Relationship between patients' gender and accuracy of report forms 506.

Gender	Accuracy report forms 506	
	Inaccurate Number (%)	Accurate Number (%)
Male	239 (61.0)	153 (39.0)
Female	265 (60.4)	174 (39.6)

$\chi^2 = 0.032$, $p = 0.859$, $df = 1$

As shown in table 31; accuracy was highest for the youngest age group, and accuracy differed significantly by age.

Table 31: Relationship between patients' age and accuracy of report forms 506.

Age group	Accuracy report forms 506	
	Inaccurate Number (%)	Accurate Number (%)
0-4	85 (34.6)	161 (65.4)
5-9	90 (69.8)	39 (30.2)
10-19	82 (71.9)	32 (28.1)
20-34	76 (66.7)	38 (33.3)
35-54	92 (73.6)	33 (26.4)
55 Up	79 (77.5)	23 (22.5)

$\chi 2 = 103.415$, $p < 0.001$, $df = 5$

As shown in table 32; the number and patients who were other, including "child" occupation (42.4%) accuracy report forms 506 higher other group. When tested statistically, occupation was related to the accuracy report forms 506 with statistical significance, at p.value < 0.05.

Table 32: Relationship between occupations and accuracy of report forms 506.

Occupation	Accuracy report forms 506	
	Inaccurate Number (%)	Accurate Number (%)
Agriculture fish farmer Fisherman animal farmer	77 (64.2)	43 (35.8)
Worker	71 (72.4)	27 (27.6)
Student	74 (60.2)	49 (39.8)
Other, including "child"	282 (57.6)	208 (42.4)

$\chi 2 = 8.322$, $p = 0.040$, $df = 3$

As shown in table 33, the number and patients who were male (66.3%) promptness report forms 506 more than female (62.6). This difference was not statistically significant ($p > 0.05$).

Table 33: Relationship between patients' gender and promptness of report forms 506.

Gender	Promptness report forms 506	
	Not promptly Number (%)	Promptly Number (%)
Male	132(33.7)	260 (66.3)
Female	164(37.4)	275 (62.6)

$\chi^2 = 1.226$, $p = 0.268$, $df = 1$

As table 34 and 35 show that unlike completeness and accuracy, promptness of reporting was not associated with patient's age or occupation.

Table 34: Relationship between patients' age and promptness of report forms 506.

Age group	Promptness report forms 506	
	Not promptly Number (%)	Promptly Number (%)
0-4	98 (39.8)	148 (60.2)
5-9	44 (34.1)	85 (65.9)
10-19	36 (31.6)	78 (68.4)
20-34	41 (36.0)	73 (64.0)
35-54	42 (33.6)	83 (66.4)
55 Up	35 (34.3)	67 (65.7)

$\chi 2 = 3.150$, $p = 0.677$, $df = 5$

Table 35: Relationship between occupation and promptness of report forms 506.

Occupation	Promptness report forms 506	
	Not promptly Number (%)	Promptly Number (%)
Agriculture fish farmer		
Fisherman animal farmer	44 (36.7)	76 (63.3)
Worker	33 (33.7)	65 (66.3)
Student	40 (32.5)	83 (67.5)
Other	179 (36.5)	311 (63.5)

$\chi 2 = 0.912$, $p = 0.823$, $df = 3$

Interrelationships of health center characteristics with quality of reporting.

Table 36: Relationship between health center and quality of data in surveillance report.

Quality of data	Range	$\chi 2$	Df	P- value
Completeness	14.0 - 97.8%	267.118	24	< 0.001
Promptness	19.1 - 96.2%	122.404	24	< 0.001
Accuracy	0.0 - 84.4%	110.539	24	< 0.001

As shown in table 37; knowledge about the epidemiology surveillance reporting system was not associated with overall quality or any of its specific components.

Table 37: Pearson correlation coefficient between knowledge of the person responsible for completing the report from 506 and quality surveillance report data.

Aspect of Quality	r	P- value
Completeness	-0.142	0.497
Promptness	0.258	0.212
Accuracy	-0.159	0.449
Overall quality	0.012	0.953

As shown in table 38; attitude regarding epidemiologic reporting was positively and significantly associated with promptness (p=0.033). Attitude was not associated with other aspects of quality.

Table 38: Pearson correlation coefficient between attitude of the person responsible for completing the report from 506 and quality surveillance report data.

Aspect of Quality	r	P- value
Completeness	-0.064	0.760
Promptness	0.237	0.253
Accuracy	-0.090	0.669
Overall quality	0.74	0.725

As shown in table 39, 40, and 41 show that neither gender, neither age, nor marital status of the person completing the report from 506 was significantly associated with any aspect of quality.

Table 39: Differences among gender and completeness rate, promptness rate, accuracy rate, overall quality rate of report forms 506.

Measure	Gender of person who completes form 506		P-value
	Male	Female	
Mean completeness rate	0.564	0.573	0.923
Mean promptness rate	0.663	0.629	0.678
Mean accuracy rate	0.394	0.347	0.549
Mean overall quality rate	0.640	0.612	0.415

Table 40: Pearson correlation coefficient between age of the person responsible for completing the report from 506 and quality surveillance report data.

Aspect of Quality	r	P- value
Completeness	0.056	0.789
Promptness	0.332	0.105
Accuracy	-0.202	0.333
Overall quality	0.188	0.367

Table 41: Differences among marital status of the person responsible for completing the report from 506 and completeness rate, promptness rate, accuracy rate, overall quality rate of report forms 506.

Measure	Marital status of person who completes form 506		P-value
	Single	Married	
Mean completeness rate	0.492	0.593	0.307
Mean promptness rate	0.640	0.649	0.928
Mean accuracy rate	0.373	0.371	0.983
Mean overall quality rate	0.602	0.635	0.427

As shown in table 41, 42, and 43 shows that neither birthplace, income, nor duration of working for the government of persons completing the report forms 506 was significantly associated with any aspect of quality.

Table 42: Differences among birthplace and completeness rate, promptness rate, accuracy rate, overall quality rate of report forms 506.

Measure	Birthplace of person who completes form 506		P-value
	In this district	Other district	
Mean completeness rate	0.589	0.552	0.666
Mean promptness rate	0.600	0.683	0.321
Mean accuracy rate	0.405	0.203	0.444
Mean overall quality rate	0.625	0.627	*0.622

*Difference tested by Mann Whitney U-test

Table 43: Pearson Correlation coefficient between monthly income and quality of data in surveillance report.

Aspect of Quality	r	P- value
completeness	0.181	0.387
promptness	0.170	0.417
accuracy	-0.045	0.831
overall quality	0.086	0.681

Table 44: Pearson correlation coefficient between time working and quality surveillance report data.

Aspect of Quality	r	P- value
completeness	0.117	0.577
promptness	0.325	0.112
accuracy	-0.120	0.568
overall quality	0.270	0.191

Table 45 shows that duration of experience with completing the report forms 506 was positively and significantly associated with completeness and overall quality, but was not associated with accuracy or promptness.

Table 45: Pearson correlation coefficients between years responsible for completing report from 506 and quality surveillance report data.

Aspect of Quality	r	P- value
completeness	0.575	0.003
promptness	0.256	0.217
accuracy	0.288	0.163
overall quality	0.680	<0.001

As shown in table 46; training in epidemiology was not significantly associated with any aspect of quality.

Table 46: Differences among training received on epidemiology and completeness rate, promptness rate, accuracy rate, overall quality rate of report forms 506.

Measure	Received epidemiology training		P-value
	Yes	No	
Mean completeness rate	0.592	0.492	0.314
Mean promptness rate	0.639	0.670	0.747
Mean accuracy rate	0.368	0.382	0.883
Mean overall quality rate	0.630	0.619	0.787

As shown in table 47; A submission of forms by diskette was associated with significantly better completeness and overall quality than was submission as hard copy. Method of submission was not associated with promptness or accuracy. A similar pattern was observed for receipt of support/feedback in implementation of job responsibilities (table 48), and for receiving supervision in epidemiology-related activities (table 48).

Table 47: Differences among method in submitting report form and completeness rate, promptness rate, accuracy rate, overall quality rate of report forms 506.

Measure	Method of submitting form 506		P-value
	By hard copy	By Diskette	
Mean completeness rate	0.483	0.720	0.003
Mean promptness rate	0.655	0.631	0.784
Mean accuracy rate	0.332	0.442	0.175
Mean overall quality rate	0.594	0.684	0.007

Table 48: Differences among supporting activities/feedback in implementation and completeness rate, promptness rate, accuracy rate, overall quality rate of report forms 506.

Measure	Receives supporting activities		P-value
	Yes	No	
Mean completeness rate	0.660	0.451	0.009
Mean promptness rate	0.680	0.605	0.372
Mean accuracy rate	0.410	0.322	0.269
Mean overall quality rate	0.670	0.572	0.002

Table 49: Differences among receiving supervision on epidemiology and completeness rate, promptness rate, accuracy rate, overall quality rate of report forms 506.

Measure	Receives supervision		P-value
	Yes	No	
Mean completeness rate	0.660	0.451	0.009
Mean promptness rate	0.680	0.605	0.372
Mean accuracy rate	0.410	0.322	0.269
Mean overall quality rate	0.670	0.571	0.002

Table 50: Differences among transportation and communication and completeness rate, promptness rate, accuracy rate, overall quality rate of report forms 506.

Measure	Convenience of transportation		P-value
	Good	Poor	
Mean completeness rate	0.592	0.493	0.314
Mean promptness rate	0.639	0.671	0.747
Mean accuracy rate	0.368	0.382	0.883
Mean overall quality rate	0.630	0.619	0.787

Interrelationships of sub-district with quality

As shown in table 51; there was a highly significant difference among sub-districts in the completeness of report forms (p=0.001). Completeness was highest in Nakhean and Bangjak, and lowest in Tarrai and Mamungsongton.

Table 51:Relationship between Sub districts of patients and completeness of report forms 506.

Sub district	Completeness report forms 506	
	Not completely Number (%)	Completely Number (%)
Tarrai	46 (67.6)	22 (32.4)
Pangnakhon	48 (44.0)	61 (56.0)
Plytar	21 (33.3)	42 (66.7)
Yansear	18 (51.4)	17 (48.6)
Hnongbor	17 (45.9)	20 (54.1)
Mamungsongton	37 (71.2)	15 (28.8)
Nakhean	11 (7.8)	130 (92.2)
Tarhew	46 (37.7)	76 (62.3)
Posaded	34 (46.6)	39 (53.4)
Bangjak	18 (9.5)	171 (90.5)
Pangpoon	68 (53.1)	60 (46.9)
Tarsag	44 (37.0)	75 (63.0)
Tarrear	104 (64.2)	58 (35.8)

$\chi^2 = 232.780$, $p = 0.001$, $df = 12$

As shown in table 52; promptness also differed significantly by sub-district ($p<0.001$). Promptness was highest in Tarrai and Tarrear, and lowest in Hnongbor and Tarsag.

Table 52: Relationship between Sub districts of patients and promptness of report forms 506.

Sub district	Promptness of report forms 506	
	Not prompt Number (%)	Prompt Number (%)
Tarrai	5 (21.7)	18 (78.3)
Pangnakhon	29 (43.9)	37 (56.1)
Plytar	12 (26.7)	33 (73.3)
Yansear	8 (44.4)	10 (55.6)
Hnongbor	17 (81.0)	4 (19.0)
Mamungsongton	5 (33.3)	10 (66.7)
Nakhean	51 (39.2)	79 (60.8)
Tarhew	26 (31.7)	56 (68.3)
Posaded	15 (34.9)	28 (65.1)
Bangjak	47 (26.6)	130 (73.4)
Pangpoon	23 (34.3)	44 (65.7)
Tarsag	46 (59.0)	32 (41.0)
Tarrear	12 (18.2)	54 (81.8)

$\chi^2 = 59.955$, $p < 0.001$, $df = 12$

As shown in table 53; accuracy also differed significantly by sub-district ($p<0.001$). Accuracy was highest in Nakhean and Pangpoon and lowest in Mamungsongton and Tarhew.

Table 53: Relationship between Sub districts of patients and accuracy of report forms 506.

Sub district	Accuracy of report forms 506	
	Not accurate Number (%)	Accurate Number (%)
Tarrai	17 (73.9)	6 (26.1)
Pangnakhon	37 (56.1)	29 (43.9
Plytar	24 (53.3)	21 (46.7)
Yansear	10 (55.6)	8 (44.4)
Hnongbor	14 (66.7)	7 (33.3)
Mamungsongton	15 (100.0)	0 (0.0)
Nakhean	48 (36.9)	82 (63.1)
Tarhew	66 (80.5)	16 (19.5)
Posaded	34 (79.1)	9 (20.9)
Bangjak	113 (63.8)	64 (36.2)
Pangpoon	37 (55.2)	30 (44.8)
Tarsag	44 (56.4)	34 (43.6)
Tarrear	45 (68.2)	21 (31.8)

$\chi^2 = 67.572, p < 0.001 , df = 12$

Interrelationships of month with quality

As shown in table 54; there was no significant relationship between month and completeness of reporting.

Table 54: Relationship between months and completeness of report forms 506.

Month	Completeness report forms 506	
	Not completely Number (%)	Completely Number (%)
January	41 (41.4)	58 (58.6)
February	50 (39.1)	78 (60.9)
March	54 (38.0)	88 (62.0)
April	31 (38.3)	50 (61.7)
May	65 (41.1)	93 (58.9)
June	54 (38.3)	87 (61.7)
July	46 (40.4)	68 (59.6)
August	47 (40.9)	68 (59.1)
September	35 (40.2)	52 (59.8)
October	31 (34.4)	59 (65.6)
November	28 (47.5)	31 (52.5)
December	30 (35.7)	54 (64.3)

$\chi^2 = 3.7789$, $p = 0.976$, $df = 11$

As shown in table 55; promptness was significantly associated with month ($p<0.001$). Promptness was highest in January and September and lowest in March and May.

Table 55: Relationship between months and promptness of report forms 506.

Month	Promptness report forms 506	
	Not prompt Number (%)	Prompt Number (%)
January	4 (6.3)	59 (93.7)
February	30 (36.1)	53 (63.9)
March	74 (80.4)	18 (19.6)
April	14 (25.5)	41 (74.5)
May	47 (48.5)	50 (51.5)
June	24 (25.8)	69 (74.2)
July	16 (21.6)	58 (78.4)
August	22 (30.6)	50 (69.4)
September	11 (20.4)	43 (79.6)
October	24 (40.7)	35 (59.3)
November	11 (31.4)	24 (68.6)
December	19 (35.2)	35 (64.8)

$\chi^2 = 131.006$, $p < 0.001$, $df = 11$

As shown in table 56; accuracy was also significantly associated with month (p=0.004). Accuracy was highest in March and October and lowest in January and July.

Table 56: Relationship between months and accuracy of report forms 506.

Month	Accuracy report forms 506	
	Not accurate Number (%)	Accurate Number (%)
January	47 (74.6)	16 (25.4)
February	51 (61.4)	32 (38.6)
March	41 (44.6)	51 (55.4)
April	38 (69.1)	17 (30.9)
May	54 (55.7)	43 (44.3)
June	57 (61.3)	36 (38.7)
July	54 (73.0)	20 (27.0)
August	38 (52.8)	34 (47.2)
September	36 (66.7)	18 (33.3)
October	31 (52.5)	28 (47.5)
November	24 (68.6)	11 (31.4)
December	33 (61.1)	21 (38.9)

$\chi^2 = 27.748$, $p = 0.004$, $df = 11$