



CHAPTER IV

RESULTS

The data in this thesis are presented in five sections, the first three sections are the results of Phase I preliminary survey in the group of community members, physicians and drug sellers. The last two sections describe output from the involvement of civil society in local URI management guideline development and its process evaluation.

I. PATTERN OF ANTIBIOTIC USE AMONG COMMUNITY MEMBERS

A household survey was conducted among adults 18 years and older who had URI within the previous 2 weeks. The young adults lived in two slum communities of Bangkok. Of 3,973 households visited containing 6,021 household members (11,709 adults), 1466 (36.9%) households reported at least one household member with symptoms of an URI within the previous 2 weeks, totaling 12.8% (n=1,497) of adults in the community population or 12.8% of adult population. The study interviewed 779 adult URI cases after excluding current smokers (6.0%), alcoholics (0.3%), patients with cardiovascular disease (0.3%), asthma (1.1%), lower respiratory tract infection (0.3%), other diseases or condition where current antibiotic treatment (10.8%), and case unwilling to give an interview or lost of follow up (8.1%).

I.1 Characteristics of Adult URIs Cases

Most URIs cases were female, in middle age, who had less than a high school education, and had a mean income less than the average household income for the

whole nation in year 2002 (NSO, 2003a). The majority of respondents had National health coverage and had no other co-morbidity (Table 5). Based on reported symptoms and physician diagnoses (if available), 81.4% of the cases might be viral infection while 18.6% might be bacterial URIs. Other than age and symptoms related to classification criteria of viral and bacterial cases, there were no significant differences between the characteristics of both groups, except the symptom of headache and level of education that was higher in bacterial URI cases.

Table 5. Demographic and clinical characteristics of adult URI cases (n=779)

Characteristics	Probably viral URIs (n=634) No. (%)	Probably bacterial URIs (n=145) No. (%)
Female	512 (80.8)	125 (86.2)
Age: Year, mean \pm SD *	45.5 \pm 15.3	35.3 \pm 12.0
18-40 *	246 (38.8)	102 (70.3)
41-60	272 (43.5)	36 (24.8)
\geq 61	112 (17.7)	7 (4.8)
Education \leq high school *	531 (84.4)	110 (75.9)
Income: baht/ month, mean \pm SD [median]	6,445.3 \pm 9,085.8 [5,000]	7,183.5 \pm 6,855.1 [6,000]
\leq 10,000	546 (86.1)	121 (83.4)
Health insurance ^a		
No	71 (11.2)	21 (14.5)
National health coverage	352 (55.5)	80 (55.2)
Others ^b	211 (33.3)	44 (30.3)
Other co-morbidity	252 (39.7)	46 (31.7)
Sick day; days, mean \pm SD	6.2 \pm 4.0	6.3 \pm 3.7
1-7 days	499 (78.7)	117 (80.7)
Major symptoms of recent illnesses		
Headache *	427 (67.4)	114 (79.7)
Clear rhinitis	438 (69.1)	95 (66.4)
Cough *	480 (75.5)	59 (41.3)
Sore throat *	365 (57.6)	124 (86.7)
Fever *	295 (46.5)	82 (57.3)
Colored phlegm	287 (45.3)	65 (45.5)
Clear phlegm	184 (29.1)	42 (29.4)
Colored rhinitis	96 (15.1)	55 (38.5)

^an=774 ^bother health insurance includes social security scheme, private insurance, civil servant medical benefit scheme, state enterprise, and >1 type of coverage

*p-value \leq 0.05

I.2 Knowledge about URI Treatment and Antibiotic Use of URIs Cases

Overall, community members had misconceptions about all knowledge categories measured (Table 6). Many members (62.8%) indexed the progression of disease with a changing in the color of rhinitis. The majority of people (82.7%) were still confused about what bacteria and virus is, and which causes URIs, but when an interviewer named a list of symptoms, people had an idea as to whether an antibiotic was needed for that symptom or not. Less than half of surveyed adults knew about a full treatment course of antibiotics and 75.9% would discontinue their antibiotic treatment if they felt better. Moreover, more than half of the adults said that antibiotics are a safe drug, and if they had a sore throat they would purchase antibiotics at drug store. Misconception about the effectiveness of antibiotics for a sore throat was still a big problem as 88.8% of people think that antibiotics can reduce the symptoms.

Knowledge about URIs, appropriate decisions for care seeking, and antibiotic use varied among age groups, educational levels, type of health insurance, and income of respondents, but did not vary much across gender, or type of infection (viral vs. bacterial URIs) (Table 7). Adults who are usually viewed as a marginal group in society, such as the elderly, low educated person with low income, and uninsured persons, were more likely to have incorrect knowledge about URIs and antibiotics than the adults in a higher socioeconomic bracket.

Table 6. Knowledge about URIs, appropriate source of care and antibiotics of adult URI cases (N = 779)

Knowledge questions	Correct response	No. of respondent with correct answer (%)
Cause, progression and prevention of URI, mean score \pm SD / Total score		2.16 \pm 0.7 / 4
Cold normally caused from bacteria	No	135 (17.3)
Everyone can get cold, it is normal	Yes	758 (97.3)
In some case of cold, symptom can get worse and causes death	Yes	618 (79.3)
Turning to be yellowish rhinitis means symptom get worse	No	172 (22.1)
Appropriate source of care, mean score \pm SD / Total score		3.04 \pm 0.60 / 4
With low grade fever, you can just do self-care at home	Yes	735 (94.4)
If having rhinitis, you can buy a drug from drug store	Yes	598 (76.8)
If having sever sore throat, you should buy antibiotics at drug store	No	290 (37.2)
If having high fever, severe cough and chest pain, you should go to see the doctor	Yes	749 (96.1)
Antibiotics		
Antibiotic use, mean score \pm SD / Total score		1.35 \pm 0.84 / 3
You should take antibiotics at least 5-7 days	Yes	383 (49.2)
If you feel better, you can stop taking antibiotics	No	188 (24.1)
If is fine whether you take antibiotic before or after meal	No	480 (61.6)
Danger of antibiotics, mean score \pm SD / Total score		1.32 \pm 0.66 / 2
Antibiotic is a safe drug. Everyone can buy it for themselves	No	377 (48.4)
Unnecessary use of antibiotics causes resistance. Then, you would not be able to use the same drug when you get sick again	Yes	652 (83.7)
Effectiveness of antibiotics, mean score \pm SD / Total score		2.17 \pm 1.46 / 5
Antibiotics reduces sore throat	No	87 (11.2)
You should take antibiotics if you have green rhinitis	No	327 (42.0)
Antibiotics help you get recover from cold rapidly	No	338 (43.4)
Antibiotics reduces cough	No	381 (48.9)
Antibiotics cures headache	No	561 (72.0)

Table 7. Knowledge about URIs, appropriate source of care and antibiotics by characteristics of adult URIs cases (% correct answer) (N = 779)

Knowledge questions	Gender		Age group (yr.)			Education		Income (€/mo)		Insurance			Type of URI	
	M	F	18-40	41-60	≥ 61	≤ high school	> high school	≤10000	>10000	None	Nat. coverage	Others	Viral	Bacterial
Cause, progression and prevention of URI														
Cold normally caused from bacteria	19.7	16.8	<u>23.0</u>	<u>13.1</u>	<u>11.8</u>	<u>12.2</u>	<u>42.9</u>	<u>15.0</u>	<u>31.3</u>	<u>13.0</u>	<u>14.8</u>	<u>23.1</u>	17.4	17.2
Everyone can get cold, it is normal	97.9	97.2	98.0	97.8	94.1	80.7	72.9	97.5	96.4	97.8	97.5	96.9	97.0	98.6
In some case of cold, symptom can get worse and causes death	77.5	79.7	<u>74.1</u>	<u>83.3</u>	<u>84.0</u>	<u>80.7</u>	<u>72.9</u>	78.7	83.0	76.1	80.6	78.4	79.7	77.9
Turning to be yellowish rhinitis means symptom get worse	16.9	23.2	25.3	19.9	18.5	22.3	20.3	22.0	22.3	27.2	21.8	20.8	21.6	24.1
Appropriate source of care														
With low grade fever, you can just do self-care at home	93.7	94.5	96.3	93.3	91.6	93.8	97.0	94.2	95.5	93.5	94.4	94.5	94.3	94.5
If having rhinitis, you can buy a drug from drug store	76.1	76.9	79.3	76.3	70.6	77.5	72.9	77.4	73.2	73.9	78.0	75.7	76.5	77.9
If having sever sore throat, you should buy antibiotics at drug store	40.1	36.6	37.9	37.8	33.6	<u>34.3</u>	<u>51.9</u>	<u>34.5</u>	<u>53.6</u>	<u>30.4</u>	<u>34.7</u>	<u>43.9</u>	36.8	39.3
If have high fever, severe cough, chest pain, you should see the doctor	94.4	96.5	96.6	96.2	95.0	95.9	97.0	96.1	96.4	93.5	97.2	95.3	95.9	97.2
Antibiotics														
Antibiotic use														
You should take antibiotics at least 5-7 days	44.4	50.2	48.0	51.6	46.2	49.8	45.1	48.9	50.9	45.7	48.8	51.0	49.5	47.6
If you feel better, you can stop taking antibiotics	24.6	24.0	<u>28.7</u>	<u>20.8</u>	<u>19.3</u>	<u>19.8</u>	<u>45.9</u>	<u>22.0</u>	<u>36.6</u>	25.0	21.3	28.6	<u>22.9</u>	<u>29.2</u>
If is fine whether you take antibiotic before or after meal	61.3	61.7	65.2	59.9	55.5	<u>59.4</u>	<u>71.4</u>	61.5	62.5	56.5	63.4	60.4	62.1	59.3
Danger of antibiotic														
Antibiotic is a safe drug. Everyone can buy it for themselves	44.4	49.3	<u>60.9</u>	<u>42.6</u>	<u>26.9</u>	<u>43.8</u>	<u>71.4</u>	<u>45.6</u>	<u>65.2</u>	<u>32.6</u>	<u>46.5</u>	<u>57.3</u>	<u>46.4</u>	<u>57.2</u>
Unnecessary use of antibiotics causes resistance. Then, you would not be able to use the same drug when you get sick again	74.6	85.7	85.3	85.3	74.8	83.6	83.5	83.7	83.9	<u>75.0</u>	<u>87.0</u>	<u>81.2</u>	83.8	83.4
Effectiveness of antibiotics														
Antibiotics reduces sore throat	12.0	11.0	12.4	9.6	11.8	10.8	13.5	10.5	15.2	15.2	10.9	10.2	10.9	12.4
You should take antibiotic if you have green rhinitis	48.6	40.5	<u>47.4</u>	<u>38.5</u>	<u>35.3</u>	41.5	43.6	<u>40.2</u>	<u>52.7</u>	43.5	39.1	46.3	40.7	47.6
Antibiotic helps you get recover from cold rapidly	49.3	42.1	<u>47.1</u>	<u>44.2</u>	<u>26.3</u>	42.3	48.1	<u>41.5</u>	<u>54.5</u>	42.4	42.8	44.7	42.4	47.6
Antibiotics reduces cough	45.8	49.6	51.7	49.0	40.3	48.2	51.9	48.0	54.5	44.6	50.2	48.2	49.2	47.6
Antibiotics cures headache	72.5	71.9	<u>75.9</u>	<u>72.4</u>	<u>59.7</u>	<u>70.2</u>	<u>80.5</u>	<u>69.9</u>	<u>84.8</u>	65.2	71.1	76.1	71.1	75.9

Figure underlined indicates p-value ≤ 0.05

I.3 Attitudes toward URIs and Antibiotic Use of Adult URI Cases

Overall, it appeared that the adult URI cases liked to be informed about health care information, but less likely to be involved in their health care (Table 8). The lower mean IF score for items related to receiving of information from drug sellers may indicate that patients preferred to get health information from physicians rather than the drug sellers.

Table 8. Attitudes of URIs patients towards different treatment approaches (n=778)

Different treatment approaches	Mean score \pm SD
Preference for health related information (IF)	13.13 \pm 1.88
When you visit the doctor, you should ask him/her about your health	4.12 \pm 0.73
When you visit the doctor and have any question, you should ask him/her immediately	4.16 \pm 0.72
After telling your symptoms to drug seller, he/she should explain all the alternative drugs and leave a decision to you for what drug to be bought	2.91 \pm 1.19
It is better to trust the doctor in charge than to question in their treatment	4.04 \pm 0.85
Preferences for self-care & active participation in medical care (BI)	8.63 \pm 1.80
If it cost the same, you should go to see doctor than to do self-care	3.79 \pm 1.07
It is better to rely on yourself than a doctor if it is just a mild common cold	4.12 \pm 0.78
Recovery is quicker under the care of doctor than you take care yourself	3.72 \pm 0.99
Total score	21.76 \pm 2.60

High score = more favorable attitude; *Low score = more favorable attitude*

Age group, level of education and income had some relationship with patients' attitudes toward different approaches. Younger patients preferred to be informed about health information from the health providers and were more likely to get involved in taking their health more seriously than the elderly group. Patients with higher education or higher income also had higher preference for health-related information and were more likely to actively participate in medical care or self-care than patients in low education levels and low-income groups. Gender of the respondents and their type of health insurance were not significantly associated with attitudes toward treatment approach (Table 9).

Table 9. Attitudes towards different treatment approaches by characteristics of adult URIs cases (n=778)

Different treatment approach	Mean score						
	Gender		Age group (yr.)			Education	
	Male	Female	18-40	41-60	≥ 61	≤ high school	> high school
Preference for health related information (IF)	13.05	13.15	<u>13.30</u>	<u>13.08</u>	<u>12.79</u>	<u>13.02</u>	<u>13.69</u>
When you visit the doctor, you should ask him/her about your health	4.09	4.12	4.14	4.08	4.11	<u>4.08</u>	<u>4.26</u>
When you visit the doctor and have any question, you should ask him/her immediately	4.11	4.16	4.18	4.11	4.18	<u>4.12</u>	<u>4.31</u>
After telling your symptoms to drug seller, he/she should explain all the alternative drugs and leave a decision to you for what drug to be bought	2.93	2.89	2.91	2.95	2.74	2.87	3.05
It is better to trust the doctor in charge than to question in their treatment	<u>4.05</u>	<u>4.03</u>	<u>3.93</u>	<u>4.08</u>	<u>4.24</u>	4.05	3.92
Preferences for self-care & active participation in medical care (BI)	8.72	8.61	8.62	8.66	8.57	8.63	8.56
If it cost the same, you should go to see doctor than to do self-care	<u>3.82</u>	<u>3.77</u>	<u>3.86</u>	<u>3.72</u>	<u>3.70</u>	<u>3.74</u>	<u>3.95</u>
It is better to rely on yourself than a doctor if it is just a mild common cold	4.18	4.10	4.09	4.13	4.13	4.13	4.04
Recovery is quicker under the care of doctor than you take care yourself	<u>3.64</u>	<u>3.71</u>	<u>3.61</u>	<u>3.77</u>	<u>3.86</u>	<u>3.75</u>	<u>3.50</u>
Different treatment approach	Income (baht/month)		Insurance			Type of URI	
	≤10000	>10000	None	National coverage	Others	Viral	Bacterial
Preference for health related information (IF)	13.10	13.72	12.96	13.14	13.19	<u>13.05</u>	<u>13.51</u>
When you visit the doctor, you should ask him/her about your health	4.10	4.21	4.08	4.11	4.13	4.09	4.21
When you visit the doctor and have any question, you should ask him/her immediately	4.14	4.21	4.03	4.19	4.13	4.14	4.21
After telling your symptoms to drug seller, he/she should explain all the alternative drugs and leave a decision to you for what drug to be bought	2.90	2.91	2.89	2.89	2.92	<u>2.86</u>	<u>3.09</u>
It is better to trust the doctor in charge than to question in their treatment	<u>4.03</u>	<u>4.01</u>	<u>4.04</u>	<u>4.06</u>	<u>3.98</u>	<u>4.04</u>	<u>3.98</u>
Preferences for self-care & active participation in medical care (BI)	8.60	8.79	8.84	8.50	8.77	8.63	8.60
If it cost the same, you should go to see doctor than to do self-care	<u>3.76</u>	<u>3.88</u>	<u>3.70</u>	<u>3.81</u>	<u>3.75</u>	<u>3.77</u>	<u>3.67</u>
It is better to rely on yourself than a doctor if it is just a mild common cold	4.10	4.10	4.21	4.08	4.14	4.12	4.10
Recovery is quicker under the care of doctor than you take care yourself	<u>3.74</u>	<u>3.52</u>	<u>3.67</u>	<u>3.77</u>	<u>3.61</u>	<u>3.72</u>	<u>3.67</u>

High score = more favorable attitude; Low score = more favorable attitude; Figure underlined indicates p-value ≤ 0.05

The results on health locus of control revealed that patients believed in other's ability to exert control over their health rather than controlling their own. This matched the measurements of attitudes towards treatment approach that the surveyed community members were not actively involved in their health care. Although URI patients responded that a common cold is not a severe problem, and they can deal with the cold to some extent, most of them still relied heavily on physicians or drug sellers to take care of their health. In addition, chance or luck also played a role in determining health and illness of the surveyed adult URIs (Table 10).

Table 10. Health locus of control of adult URIs patients (n=778)

Health locus of control	Mean score \pm SD
Internal health locus of control (IHLC) (Total score 15)	10.82 \pm 1.73
You are in control of your health	3.56 \pm 1.02
When you get cold, you are to blame	3.01 \pm 1.15
If you get cold, it is your own behavior which determines how soon you get well again	4.24 \pm 0.58
Chance (CHLC) (Total score 10)	5.83 \pm 1.63
If it is meant to be, even you take good care of yourself, you will get cold any way	3.82 \pm 0.95
Luck plays a big part in determining how soon you will get recover from cold	2.01 \pm 1.19
Powerful others (PHLC) (Total score 15)	6.04 \pm 1.77
Whenever you feel like getting cold, you should consult a doctor	2.83 \pm 1.22
The only thing to keep you healthy is to do what the doctors tell you to do	3.85 \pm 0.85
When you recover, it is usually because others have been taking good care of you	3.21 \pm 1.05

1 = strongly disagree, 5 = strongly agree;

High score = more favorable attitude; *Low score = more favorable attitude*

People's beliefs regarding their own ability to control their health were not significantly different across socioeconomic status, but their beliefs in external powers, like health professional and luck, varied between groups. Women, elderly patients, low educated persons with low income, and persons with no health insurance were more likely to believe that health professionals and luck or fate had control over their health, in contrast with their colleagues in higher socioeconomic brackets (Table11).

Table 11. Health locus of control of adult URI cases by their characteristics (n=778)

Health locus of control	Mean score						
	Gender		Age group (yr.)			Education	
	Male	Female	18-40	41-60	≥ 61	≤ high school	> high school
Internal health locus of control (IHLC)	10.94	10.79	10.73	10.85	11.00	10.78	11.05
You are in control of your health	3.64	3.55	3.51	3.57	3.70	3.54	3.68
When you get cold, you are to blame	3.02	3.01	2.97	3.04	3.07	3.01	3.07
If you get cold, it is your own behavior which determines how soon you get well again	4.28	4.24	4.25	4.24	4.23	4.23	4.31
Chance (CHLC)	<u>5.53</u>	<u>5.90</u>	<u>5.42</u>	<u>6.00</u>	<u>6.59</u>	<u>6.04</u>	<u>4.77</u>
If it is meant to be, even you take good care of yourself, you will get cold any way	3.72	3.84	<u>3.71</u>	<u>3.86</u>	<u>4.03</u>	<u>3.91</u>	<u>3.37</u>
Luck plays a big part in determining how soon you will get recover from cold	<u>1.81</u>	<u>2.06</u>	<u>1.71</u>	<u>2.14</u>	<u>2.56</u>	<u>2.13</u>	<u>1.14</u>
Powerful others (PHLC)	<u>5.87</u>	<u>6.08</u>	<u>5.90</u>	<u>6.03</u>	<u>6.50</u>	<u>6.10</u>	<u>5.73</u>
Whenever you feel like getting cold, you should consult a doctor	2.74	2.85	2.85	2.76	2.96	2.84	2.81
The only thing to keep you healthy is to do what the doctors tell you to do	3.77	3.87	<u>3.69</u>	<u>3.97</u>	<u>4.03</u>	<u>3.91</u>	<u>3.56</u>
When you recover, it is usually because others have been taking good care of you	3.13	3.23	<u>3.05</u>	<u>3.27</u>	<u>3.54</u>	<u>3.27</u>	<u>2.91</u>
Health locus of control	Income (baht/month)		Insurance			Type of URI	
	≤10000	>10000	None	Nation. coverage	Others	Viral	Bacterial
	≤10000	>10000	None	Nation. coverage	Others	Viral	Bacterial
Internal health locus of control (IHLC)	10.78	11.06	10.87	10.75	10.91	10.84	10.75
You are in control of your health	3.55	3.62	3.71	3.53	3.56	3.57	3.53
When you get cold, you are to blame	3.00	3.10	2.94	3.01	3.05	3.02	2.98
If you get cold, it is your own behavior which determines how soon you get well again	4.23	4.34	4.22	4.22	4.30	4.25	4.24
Chance (CHLC)	<u>5.93</u>	<u>5.25</u>	<u>6.10</u>	<u>5.97</u>	<u>5.51</u>	<u>5.91</u>	<u>5.50</u>
If it is meant to be, even you take good care of yourself, you will get cold any way	<u>3.86</u>	<u>3.58</u>	3.80	3.84	3.78	<u>3.86</u>	<u>3.65</u>
Luck plays a big part in determining how soon you will get recover from cold	<u>2.07</u>	<u>1.67</u>	<u>2.29</u>	<u>2.17</u>	<u>1.73</u>	2.05	1.85
Powerful others (PHLC)	<u>6.12</u>	<u>5.59</u>	6.31	6.05	5.94	6.06	6.00
Whenever you feel like getting cold, you should consult a doctor	2.87	2.63	3.00	2.82	2.79	2.84	2.78
The only thing to keep you healthy is to do what the doctors tell you to do	3.87	3.75	3.78	3.88	3.83	3.87	3.77
When you recover, it is usually because others have been taking good care of you	3.25	2.97	3.32	3.26	3.15	3.21	3.22

1 = strongly disagree, 5 = strongly agree; High score = more favorable attitude, Low score = more favorable attitude; Figure underlined indicates p-value ≤ 0.05

I.4 Pattern of Health Seeking Behavior and Antibiotic Use

1.4.1 Treatment patterns across locations of care

Location of Care

During the course of a URI, almost every respondent (94.4%) took one or more therapeutic actions. There was no difference in the settings of care used by respondents with viral and bacterial URIs. Eighty-three percent (647) of respondents had practiced some self-care or self-medication at home, and nearly half had visited a drug store (371, 47.6%) and/or a clinical setting (342, 43.9%). Care seeking at drug stores included both self-prescribing (167, 21.4%) and requesting advice in response to describing symptoms (204, 26.2%). Patients who sought care in clinical settings visited private clinics (16.9%), hospitals (14.8%), and BMA health centers (12.1%).

People who sought care at home or at drug stores reported doing so because their symptoms were mild (18% and 23%, respectively) or to save money and time (4% and 7%, respectively). Patients who sought care in clinical settings reported doing so to save time (14%), because of persistent or worsening symptoms (12%), proximity of the clinic (10%), or availability of what they believed to be effective medicines (8.4%).

Drug Treatment

Most patients knew the therapeutic classes of the medicines they took (e.g. analgesic, cough medicine), but rarely knew drug names. They were generally able to give information about drug characteristics (e.g. black-and-red capsule) and identify the medicine on pictures presented by the interviewers.

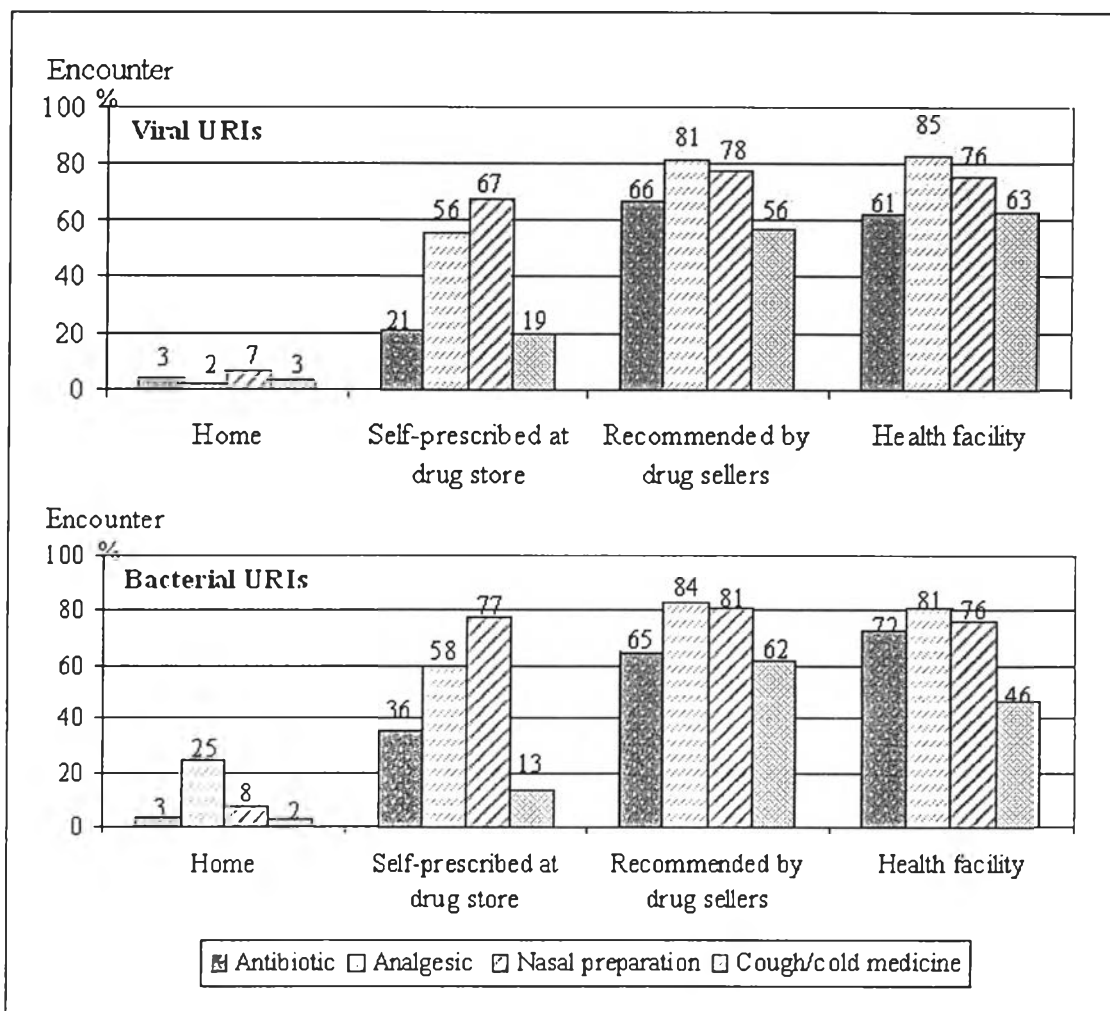
On average, 46.0% of all patients reported using antibiotics during their URI, including 44.2% of viral URI patients and 53.8% of bacterial URI patients (p-value 0.042) (Table 12). Analgesics/antipyretics and nasal preparation were used more frequently than antibiotics and cough remedies in both patient groups.

Table 12. Drug treatment of adult patients by type of URI (n=779)

Treatment	Probably viral URIs (n=634) No. (%)	Probably bacterial URIs (n=145) No. (%)
Antibiotic use*	280 (44.2)	78 (53.8)
Other drug use		
Analgesics/antipyretic	452 (71.3)	115 (79.3)
Nasal preparation	425 (67.0)	109 (75.2)
Cough remedies	274 (43.2)	59 (40.7)

* p-value=0.042

With few exceptions, viral and bacterial URI patients had the same pattern of medicine use at each source of care (Figure 5), including similar use of antibiotics. Viral URI patients self-prescribed fewer analgesics at home ($p=0.01$) and received fewer cough remedies in clinical settings ($p=0.02$) than bacterial URI patients.

**Figure 5.** Prevalence of drug treatments in different settings by type of URIs

While their treatment did not vary by type of infection, it rather varied by source of care. More than 80% of patients reported initiating some kind of treatment at home. However, both viral and bacterial URI patients received drugs, including antibiotics, more frequently when they sought advice about care at drug stores and/or health facilities compared when they self-managed at home or self-prescribed at drug stores. Three percent of patients self-treating at home, 24.0% of patients self-prescribing at drug stores, 65.3% of patients consulting the drug sellers, and 64.7% of patients consulting physicians in health facilities received antibiotics for their URIs. Among antibiotic users, about one-third had received an antibiotic recommendation by a drug seller (36.9%) and more than half had received an antibiotic in a clinical setting (54.7%). Only 11.2% of antibiotic users self-prescribed these drugs at drug stores and 5.6% at home.

Treatments recommended by drug sellers and treatments prescribed by physicians in health facilities did not differ. Clinicians in hospitals and private clinics prescribed antibiotics more frequently than those in BMA health centers (67.6%, 67.5%, 47.8% respectively).

I.4.2 Treatment Patterns at Initial and Subsequent Points of Care

Viral and bacterial URI patients tended to seek care in the same sequence of locations, initiating treatment at home, and then seeking treatment at drug stores, and last in health settings. Other sources of care (1.2%) included grocery stores, health clinics at offices or schools, community health volunteers, and mobile health centers.

Treatment at Initial Point of Care

For initial treatment, 76.1% of patients used non-pharmacological self-care (rest, adjusting water or food intake) and self-medication at home (either antibiotics or other medicines), while 11.4% sought care at drug stores and only 5.6% in clinical settings (Figure 6). At drug stores, more patients sought advice from drug sellers by telling them their symptoms than purchased self-prescribed medicines.

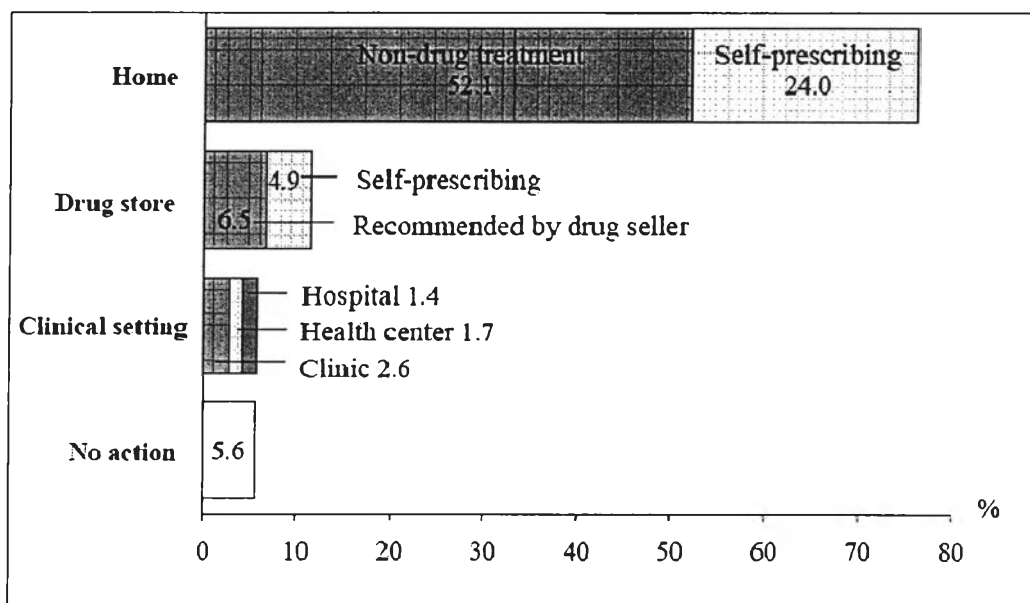


Figure 6. First source of care of adult URI patients (n = 779)

Treatment at Subsequent Points of Care

Two-thirds (67.9%) of patients sought further care in another setting, of which 52.7% sought care in drug stores and 42.0% in clinical settings. A total of 9.1% of patients sought care at a third setting, usually a health care facility. Viral URI patients visited fewer locations of care than bacterial URI patients (mean number of places visited 1.76 and 1.88 respectively, $p=0.057$). When seeking care in a second setting, more bacterial than viral URI patients visited a clinical setting, especially a hospital (21.4% vs. 13.2% respectively, $p=0.019$), where antibiotic prescribing was most frequent. Use of antibiotics in each location of care did not differ by likelihood of viral and bacterial diagnosis, or by initial treatment versus treatment later in the illness episode (Table 13).

Table 13. Proportion of URI patients who received antibiotics by source of care and at different points in the illness episode

Antibiotic received at each source of care	Initial treatment in the illness episode				At any later point of treatment in the illness episode			
	Viral URIs		Bacterial URIs		Viral URIs		Bacterial URIs	
	No./Total (%)	No./Total (%)	No./Total (%)	No./Total (%)	No./Total (%)	No./Total (%)	No./Total (%)	
Home stock	15/518 (2.9)	3/119 (2.5)	1/8 (12.5)	1/2 (50.0)				
Purchase drug without advice	9/30 (30.0)	3/8 (37.5)	20/107 (18.7)	8/23 (34.8)				
Purchase drug with advice	28/40 (70.0)	7/11 (63.6)	80/125 (64.0)	17/26 (65.4)				
Clinical settings	21/39 (53.8)	4/5 (80.0)	130/212 (61.3)	45/67 (67.2)				

I.5 Factors Associated with Health Seeking Behavior and Antibiotic Use

There were some different factors associated with health seeking and antibiotic use between viral and bacterial URIs patients.

I.5.1 Factors associated with health seeking behavior

Knowledge about URIs, appropriate care seeking and antibiotics as well as attitudes toward health care were associated with the initial source of care for adults with viral URIs patients. Adults who started treatment at home first appeared to have better knowledge about URIs and cases self-prescribing at drug stores had correct information about antibiotics than patients who seek first care at other places (Table 14). Patients who went to purchase medicine without asking for advice from a drug seller had preferable attitudes toward receiving health care information, more likely to be involved in their health care, believed in one's ability to control their own health, and less likely to depend on a health professional or chance (Table 15). In contrast, viral URI patients who started treatment by requesting advice at drug stores had misconceptions about URIs, appropriate sources of care and antibiotics, less likely to prefer receiving health information, and believed more in the power of others in controlling their health (Table 16).

In bacterial URIs cases, only type of health insurance and belief in control of chance on health were the most influential characteristics. Adults with no health insurance sought advice at drug stores more frequently, while those under the national health coverage and other schemes started their first care at home (p-value 0.03). Knowledge, other demographic characteristics and attitudes toward treatment approach were not different across initial source of care in bacterial URIs patients (Table 14-Table 16).

Table 14. Knowledge about URIs, source of care and antibiotics by type of URIs and initial source of care (% correct answer)

% of correct answer	Likely to be viral URIs				Likely to be bacterial URIs			
	Home (518)	Purchase drug		Clinical settings (39)	Home (119)	Purchase drug		Clinical settings (5)
		without advice (30)	with advice (40)			without advice (8)	with advice (11)	
Cause, progression and prevention of URI								
Cold normally caused from bacteria	<u>19.1</u>	<u>13.3</u>	<u>7.5</u>	<u>5.1</u>	19.3	0.0	9.1	0
Everyone can get cold, it is normal	96.5	100	97.5	100	99.2	87.5	100	100
In some case of cold, symptom can get worse and causes death	<u>80.9</u>	<u>63.3</u>	<u>67.5</u>	<u>87.2</u>	78.2	75.0	72.7	80.0
Turning to be yellowish rhinitis means symptom get worse								
Appropriate source of care	22.0	16.7	15.0	17.9	24.4	37.5	18.2	0
With low grade fever, you can just do self-care at home	95.0	90.0	90.0	92.3	95.0	87.5	100	40.0
If having rhinitis, you can buy a drug from drug store	<u>74.9</u>	<u>86.7</u>	<u>95.0</u>	<u>66.7</u>	78.2	75.0	100	40.0
If having sever sore throat, you should buy antibiotics at drug store	<u>38.0</u>	<u>30.0</u>	<u>15.0</u>	<u>48.7</u>	41.2	50.0	18.2	20.0
If have high fever, severe cough, chest pain, you should see the doctor	95.8	93.3	97.5	97.4	97.5	100	100	80.0
Antibiotics								
Antibiotic use								
You should take antibiotics at least 5-7 days	49.6	43.3	47.5	51.0	51.3	25.0	27.3	40.0
If you feel better, you can stop taking antibiotics	23.4	33.3	20.0	12.8	29.4	37.5	9.1	40.0
If is fine whether you take antibiotic before or after meal	61.2	73.3	62.5	64.1	61.3	50.0	36.4	80.0
Danger of antibiotic								
Antibiotic is a safe drug. Everyone can buy it for themselves	<u>49.0</u>	<u>36.7</u>	<u>30.0</u>	<u>33.3</u>	59.7	62.5	27.3	60.0
Unnecessary use of antibiotics causes resistance and you're unable to use the same drug again	85.3	73.3	75.0	76.9	82.4	100	72.7	100
Effectiveness of antibiotics								
Antibiotics reduces sore throat	<u>10.6</u>	<u>26.7</u>	<u>5.0</u>	<u>7.7</u>	12.6	12.5	9.1	20.0
You should take antibiotic if you have green rhinitis	<u>41.5</u>	<u>56.7</u>	<u>25.0</u>	<u>30.8</u>	47.1	75.0	45.5	40.0
Antibiotic helps you get recover from cold rapidly	42.9	50.0	30.0	41.0	50.4	50.0	18.2	40.0
Antibiotics reduces cough	48.5	56.7	50.0	53.8	49.6	62.5	18.2	60.0
Antibiotics cures headache	69.9	90.0	67.5	74.4	76.5	87.5	54.5	100

Figure underlined indicates p-value ≤ 0.05

Table 15. Attitudes toward different treatment approaches by type of URIs and initial source of care

Mean score	Likely to be viral URIs				Likely to be bacterial URIs			
	Home (518)	Purchase drug		Clinical settings (39)	Home (119)	Purchase drug		Clinical settings (5)
		Without advice (30)	with advice (39)			Without advice (8)	with advice (11)	
Preference for health related information (IF)	13.01	13.47	13.08	13.05	13.60	12.88	13.18	13.20
When you visit the doctor, you should ask him/her about your health	4.10	4.00	4.05	4.05	4.20	4.00	4.18	4.40
When you visit the doctor and have any question, you should ask him/her immediately	4.15	4.03	4.08	4.13	4.20	4.25	4.27	4.20
After telling your symptoms, drug seller should explain all the alternative drugs and leave a decision to you for what drug to be bought	<u>2.80</u>	<u>3.47</u>	<u>2.87</u>	<u>3.05</u>	3.17	2.88	2.55	2.60
<i>It is better to trust the doctor in charge than to question in their treatment</i>	4.04	4.03	3.92	4.18	3.97	4.25	3.82	4.00
Preferences for self-care & active participation in medical care (BI)	8.60	9.10	9.15	8.21	8.61	8.25	8.91	8.59
<i>If it cost the same, you should go to see doctor than to do self-care</i>	<u>3.83</u>	<u>3.33</u>	<u>3.38</u>	<u>3.72</u>	3.83	3.88	3.64	4.20
It is better to rely on yourself than a doctor if it is just a mild common cold	<u>4.12</u>	<u>4.47</u>	<u>4.00</u>	<u>3.90</u>	4.08	3.88	4.36	4.20
<i>Recovery is quicker under the care of doctor than you take care yourself</i>	<u>3.69</u>	<u>4.03</u>	<u>3.46</u>	<u>3.97</u>	3.64	3.75	3.82	4.00

High score = more favorable attitude; Low score = more favorable attitude; Figure underlined indicates p-value ≤ 0.05

Table 16. Health locus of control of adult URI cases by type of URIs and initial source of care

Mean score	Likely to be viral URIs			Likely to be bacterial URIs				
	Home (518)	Purchase drug Without advice (30)	with advice (39)	Clinical settings (39)	Home (119)	Purchase drug Without advice (8)	with advice (11)	Clinical settings (5)
Internal health locus of control (IHLC)	10.80	11.48	10.95	10.78	10.79	9.31	10.68	11.20
You are in control of your health	3.54	4.00	3.65	3.49	3.52	3.06	3.59	4.00
When you get cold, you are to blame	2.99	3.15	3.06	3.23	2.99	2.56	2.91	3.00
If you get cold, it is your own behavior which determines how soon you get well again	4.25	4.33	4.23	4.08	4.29	3.69	4.18	4.20
Chance (CHLC)	5.86	6.00	6.23	6.24	<u>5.31</u>	<u>5.56</u>	<u>7.15</u>	<u>6.10</u>
If it is meant to be, even you take good care of yourself, you will get cold any way	3.85	4.00	3.86	3.82	3.63	3.69	3.91	3.90
Luck plays a big part in determining how soon you will get recover from cold	2.01	2.00	2.37	2.42	<u>1.69</u>	<u>1.88</u>	<u>3.23</u>	<u>2.20</u>
Powerful others (PHLC)	<u>6.06</u>	<u>5.20</u>	<u>6.03</u>	<u>6.74</u>	6.01	5.94	5.73	6.10
Whenever you feel like getting cold, you should consult a doctor	2.85	2.37	2.89	3.08	2.82	2.56	2.68	2.40
The only thing to keep you healthy is to do what the doctors tell you to do	3.88	3.82	3.86	3.76	3.72	4.19	4.05	3.70
When you recover, it is usually because others have been taking good care of you	<u>3.21</u>	<u>2.83</u>	<u>3.14</u>	<u>3.67</u>	3.19	3.38	3.05	3.70

High score = more favorable attitude; *Low score = more favorable attitude*; Figure underlined indicates p-value ≤ 0.05

I.5.2 Factors associated with antibiotic use

Factors associated with antibiotic use in viral and bacterial URIs were different. In viral URI cases, persons who were more likely to use antibiotics were patients in younger age groups (p-value 0.003) and cases who thought that antibiotics could reduce a sore throat (Table 17, Table 19). Attitudes toward different treatment approaches were not significantly associated with antibiotic use in viral URI patients (Table 18).

Table 17. Knowledge about URIs, source of care and antibiotics by type of URIs and antibiotic treatment

% of correct answer	Likely to be viral URIs		Likely to be bacterial URIs	
	No ABT (n=354)	ABT (n=280)	No ABT(n=67)	ABT (n=78)
Cause, progression and prevention of URI				
Cold normally caused from bacteria	18.9	15.4	<u>10.40</u>	<u>23.1</u>
Everyone can get cold, it is normal	96.6	97.5	98.5	98.7
In some case of cold, symptom can get worse and causes death	79.1	80.4	74.6	80.8
Turning to be yellowish rhinitis means symptom get worse	24.3	18.2	23.9	24.4
Appropriate source of care				
With low grade fever, you can just do self-care at home	94.1	94.6	95.5	93.6
If having rhinitis, you can buy a drug from drug store	74.6	78.9	82.1	74.4
If having sever sore throat, you should buy antibiotics at drug store	39.8	32.9	35.8	42.3
If have high fever, severe cough, chest pain, you should see a doctor	95.5	96.4	97.0	97.4
Antibiotics				
Antibiotic use				
You should take antibiotics at least 5-7 days	47.2	52.5	46.3	48.7
If you feel better, you can stop taking antibiotics	24.9	20.4	34.3	25.6
If is fine whether you take antibiotic before or after meal	60.2	64.6	64.2	55.1
Danger of antibiotic				
Antibiotic is a safe drug. Everyone can buy it for themselves	46.0	46.8	55.2	59.0
Unnecessary use of antibiotics causes resistance and you're unable to use the same drug again	81.9	86.1	79.1	87.2
Effectiveness of antibiotics				
Antibiotics reduces sore throat	<u>14.4</u>	<u>6.4</u>	14.9	10.3
You should take antibiotic if you have green rhinitis	42.9	37.9	47.8	47.4
Antibiotic helps you get recover from cold rapidly	43.2	41.4	55.2	41.0
Antibiotics reduces cough	43.8	50.4	53.7	42.3
Antibiotics cures headache	68.9	73.9	76.1	75.6

ABT = antibiotic; Figure underlined indicates p-value ≤ 0.05

Antibiotic use in bacterial URI patients was not significantly different among patients who differed in socioeconomic status and knowledge level, except the knowledge about the cause of the common cold, which was significantly higher in

patients receiving antibiotics. Adults who preferred to participate in health care used less antibiotics (Table 18). Bacterial URI patients' belief was not significantly different between those who received and did not receive antibiotics (Table 19).

Table 18. Attitudes toward different treatment approaches by type of URIs and antibiotic treatment

Mean score	Likely to be viral URIs		Likely to be bacterial URIs	
	No ABT (n=354)	ABT (n=279)	No ABT (n=67)	ABT (n=78)
Preference for health related information (IF)	12.94	13.19	13.42	13.59
When you visit the doctor, you should ask him/her about your health	4.05	4.15	4.19	4.19
When you visit the doctor and have any question, you should ask him/her immediately	4.10	4.19	4.16	4.24
After telling your symptoms, drug seller should explain all the alternative drugs and leave a decision to you for what drug to be bought	2.85	2.87	3.06	3.12
It is better to trust the doctor in charge than to question in their treatment	4.05	4.03	4.00	3.96
Preferences for self-care & active participation in medical care (BI)	8.72	8.52	<u>9.03</u>	<u>8.23</u>
If it cost the same, you should go to see doctor than to do self-care	3.72	3.83	3.67	3.96
It is better to rely on yourself than a doctor if it is a mild common cold	4.12	4.12	<u>4.24</u>	<u>3.97</u>
Recovery is quicker under the care of doctor than you take care yourself	3.68	3.77	3.54	3.78

Table 19. Health locus of control of adult URI cases by type of URIs and antibiotic treatment

Mean score	Likely to be viral URIs		Likely to be bacterial URIs	
	No ABT (n=354)	ABT (n=279)	No ABT (n=67)	ABT (n=78)
Internal health locus of control (IHLC)	10.77	10.92	10.87	10.64
You are in control of your health	3.61	3.52	3.50	3.55
When you get cold, you are to blame	<u>2.93</u>	<u>3.14</u>	3.08	2.90
If you get cold, it is your own behavior which determines how soon you get well again	4.24	4.26	4.29	4.19
Chance (CHLC)	5.92	5.89	5.40	5.59
If it is meant to be, even you take good care of yourself, you will get cold any way	3.86	3.86	3.67	3.64
Luck plays a big part in determining how soon you will get recover from cold	2.06	2.03	1.72	1.96
Powerful others (PHLC)	5.89	6.26	5.87	6.10
Whenever you feel like getting cold, you should consult a doctor	2.78	2.93	2.72	2.83
The only thing to keep you healthy is to do what doctors tell you to do	3.81	3.94	3.72	3.80
When you recover, it is usually because others have been taking good care of you	<u>3.12</u>	<u>3.33</u>	3.15	3.28

ABT = antibiotic; High score = more favorable attitude; Low score = more favorable attitude; Figure underlined indicates p-value ≤ 0.05

I.6 Cost of URI Treatment

Adult URI patients spent between 26 and 210 Thai baht for medicines during a course of an illness. On average, viral URI patients spent 84.6 baht and bacterial URI patients spent 101.3 baht. Expenditures are the lowest when patients self-prescribe at home without using antibiotics and the highest when they visit clinical settings, especially private clinics and hospitals where antibiotics were frequently prescribed. Patients generally paid more when antibiotics were prescribed compared to the treatment without antibiotics. Differences between expenditures for viral versus bacterial episodes were significant when medicines were self-prescribed at home or in drug stores (Table 20). Most (47% - 100%) expenditures for medicines were for symptomatic treatments and the use of antibiotics added less than 30 baht in each setting. In some cases, especially at the private clinics and hospitals, drug cost without antibiotic prescribing was higher than cases that received antibiotic treatment.

Table 20. Direct costs of treating URIs by type of URIs and type of treatment

Type of treatment	Average cost of drug (baht)/episode	
	with antibiotics	without antibiotics
Likely Viral URIs *	105.7 ± 140.9	66.2 ± 117.8
Self-prescribing at home and drug store*	49.4 ± 61.86	26.1 ± 40.8
Medicine recommended by drug seller	48.3 ± 43.0	40.5 ± 42.5
Medicine prescribed by physician	125.6 ± 153.8	128.4 ± 194.0
Clinic	205.0 ± 134.8	209.6 ± 128.4
Health center	34.6 ± 58.5	33.4 ± 63.4
Hospital	118.6 ± 211.7	144.5 ± 311.7
Likely Bacterial URIs *	131.7 ± 145.2	61.4 ± 102.2
Self-prescribing at home and drugstore	33.9 ± 18.6	25.8 ± 39.5
Medicine recommended by drug seller	67.7 ± 70.3	40.0 ± 39.5
Medicine prescribed by physician	121.0 ± 132.9	131.4 ± 169.3
Clinic	184.2 ± 135.5	209.2 ± 200.2
Health center	46.0 ± 39.1	38.0 ± 37.0
Hospital	89.0 ± 109.9	116.7 ± 135.4

* p-value < 0.05

II. PATTERN OF ANTIBIOTIC PRESCRIBING AMONG PHYSICIANS AT THE HEALTH CENTERS

Between January and December 2001, 4,608 adult URI patients visited the study health centers. They accounted for 10.6% of all health center patients, 15.8% of adult patients, and 35.2% of all URI patients. There was no seasonal pattern of cases presenting with URI. Almost all (97.9%) adult URI patients received a prescription, resulting in 4,512 prescriptions for analysis. Patients without a prescription may not have received one or may have filled it at a drug store outside the health center.

II.1 Characteristics of Patients and Physicians

II.1.1 Characteristics of Patients

Most patients were women and nearly half of the patients were between 18-40 years old (Table 21). More than half of the patients (57.6%) paid for their prescription at the point of service while the rest received free care or paid a small copay (30 baht, about US\$ 0.80) under the national health insurance plan. Nearly all (91.0%) adult URI patients were classified by their diagnoses and symptoms as likely to have viral URIs. Among patients likely to have bacterial URIs, more than three-fourths were diagnosed with pharyngitis. Most (87%) patients did not have other diagnoses at the time of their visit. Those with co-diagnoses mostly had chronic diseases, such as hypertension, heart disease, diabetes, arthritis, gout, and gastrointestinal disease.

II.1.2 Characteristics of Physicians

Physicians had an average age of 53 years, half were women, and most had practiced for more than 10 years (Table 22). Most physicians were general practitioners or trained in public health or family medicine. Only 4 (21%) physicians worked full-time at the health centers.

Table 21. Characteristics of patients receiving prescriptions (n=4,512)

Characteristics	No. (%)
Female	3,173 (70.3)
Age: Year, mean \pm SD	44.91 \pm 17.00
18-40	2,060 (45.7)
41-60	1,352 (29.9)
\geq 61	1,100 (24.4)
Payment	
Self payment	2,595 (57.6)
Free of charge	1,910 (42.4)
Diagnosis	
Viral URIs	4,107 (91.0)
Bacterial URIs	
Pharyngitis/ Tonsillitis	309 (6.8)
Otitis media	89 (2.0)
Sinusitis	7 (0.2)
Co-morbid illness	586 (13.0)

Table 22. Characteristics of physicians (n=19)

Characteristics	No. (%)
Female	9 (47.4)
Age: Year, mean \pm SD	52.95 \pm 15.47
Full-time practice	4 (21.1)
General practice	13 (68.4)
Year in practice	
>10	15 (78.9)
≤ 10	4 (21.1)
URI cases treated/ year	
<100	7 (36.8)
101-500	9 (47.4)
>500	3 (15.8)

II.2 Pattern of Drug Prescribing for Viral and Bacterial URIs

All patients with bacterial URIs received at least one drug and only 13 (0.3%) patients with viral URI did not receive a drug. As shown in Table 23, physicians treated viral and bacterial URIs differently. For viral URI patients, analgesics/antipyretics and antihistamines were the most frequent symptomatic treatments prescribed, followed by antibiotic agents. Physicians prescribed antihistamines and vitamins significantly more frequently for viral URI patients. Bacterial URI patients received significantly greater numbers of drugs, injections, antibiotics, analgesics/antipyretics, and cough suppressants than patients with viral illness.

Overall, 62.9% of all URI patients received a prescription for an antibiotic, 60.3% of viral URI patients and 89.4% of bacterial URI patients (91.6% of patients with pharyngotonsillitis, 83.1% with otitis media, and 71.4% with sinusitis). Antibiotics made prescriptions more costly. Prescriptions for viral URI patients with an antibiotic cost 43 baht (about US\$1.20) more than those without an antibiotics.

Table 23. Drugs prescribed for URI patients at the Health Center

Drugs prescribed	No. of prescriptions (%)	
	Viral URIs (n=4,107)	Bacterial URIs (n=405)
Antibiotics *	2,477 (60.3)	362 (89.4)
Analgesics/antipyretics *	2,983 (72.6)	328 (81.0)
Antihistamines *	2,805 (68.3)	135 (33.3)
Mucolytics	1,842 (44.9)	198 (48.9)
Cough suppressants *	1,350 (32.9)	175 (43.2)
Vitamins *	836 (20.4)	46 (11.4)
Other symptomatic drugs ^a	454 (11.1)	70 (17.3)
Mean no. of drugs per prescription *	3.20 ± 1.07	3.67 ± 1.26
Injections *	63 (1.5)	27 (9.0)
Median cost of prescription	44.0	76.0
With antibiotics	59.0	78.0
With no antibiotics	16	16

^a bronchodilators, anti-inflammatory enzymes, (antiseptic) mouth preparations, topical antiseptics

* P-value <0.05

II.3 Appropriateness of Antibiotic Prescribing

To assess appropriateness of antibiotic prescribing, we evaluated the type and duration of antibiotic treatment among patients with common cold, pharyngitis/tonsillitis, and otitis media, who had no other diagnoses and who received an antibiotic drug. These patients received 16 different antibiotics, all of which were on the 1999 National Essential Drugs List. Regardless of diagnosis, amoxicillin was the most frequently prescribed antibiotics. Macrolides (erythromycin, roxithromycin), chloramphenicol, and lincomycin injection were more frequently prescribed for bacterial than for viral URIs (Table 24).

Table 24. Antibiotics prescribed among antibiotic recipients ^a

Antibiotics prescribed	No. of prescription (%) ^b		
	Common cold (n=2,247)	Pharyngitis/ tonsillitis (n=275)	Otitis media (n=70)
Penicillin V	54 (2.4)	8 (2.9)	3 (4.3)
Erythromycin	67 (3.0)	3 (1.1)	2 (2.9)
Amoxicillin±clavulanic acid/ Ampicillin*	1,587 (70.6)	196 (71.3)	31 (44.3)
Co-trimoxazole	70 (3.1)	9 (3.3)	5 (7.1)
Doxycycline	17 (0.8)	2 (0.7)	- -
Roxithromycin*	141 (6.3)	37 (13.5)	4 (5.7)
Dicloxacillin/ Cloxacillin*	217 (9.7)	14 (5.1)	23 (32.9)
Tetracycline	87 (3.9)	5 (1.8)	- -
Chloramphenicol ^c *	10 (0.4)	2 (0.7)	25 (35.7)

^a only patients with no other diagnosis than URI

^b totals may sum to more than 100% because some patients received >1 kind of antibiotics

^c eye/ ear drop preparation

*P-value < 0.05 for differences in prescribing across disease categories

Note: shading indicates guideline-recommended therapy

Only a small proportion of URI patients were treated according to the National Standard Treatment Guideline for Respiratory Diseases (1996). Shaded boxes in Table 24 show appropriate prescribing based on diagnosis. Only 36.4% (1,287) of viral URI patients were treated correctly without antibiotics. Among URI patients with likely

bacterial diagnoses, 14.2% (52) received appropriate oral antibiotics, 4.0% (11) of those with pharyngitis/tonsillitis and 54.3% (38) of those with otitis media.

The average duration of prescribed oral antibiotic treatment was 6.3 days for viral URIs and 6.7 for bacterial URIs. When considering appropriateness of indication and duration of antibiotic prescribing simultaneously, only 1.7% of bacterial URI patients were treated appropriately, 5 (1.8%) patients with pharyngitis/tonsillitis and 1 (1.4%) patients with otitis media.

II.4 Factors Associated with Antibiotic Prescribing

II.4.1 Factors associated with antibiotic prescribing in viral URIs

Among viral URI patients, antibiotic prescribing ranged widely from 28.9% in patients with comorbid endocrine disease (DM, hyper/hypothyroid) to 83.3% in patients with comorbid HIV infection. Adjusted for potential physician clustering and potential confounders, several patient and physician characteristics were associated with greater rates of antibiotic prescribing in viral URIs (Table 25). Male patients and younger patients (under age 60) were significantly more likely to receive antibiotics for viral URIs than their respective comparison groups. Patients who paid for their medicines out-of pocket or were insured under non-national health plans were somewhat more likely to receive antibiotics than those insured under the national health plan. Part-time physicians tended to prescribe more antibiotics but this association was also not statistically significant.

II.4.2 Factors associated with antibiotic prescribing in bacterial URIs

There was little variability in antibiotic prescribing for bacterial URI patients. Only payment status was a significant predictor of antibiotic prescribing for bacterial URIs, after adjusting for health center. Patients paying out of pocket or insured under non-national health plans were more likely to receive antibiotics than those insured under the national health plan (OR, 2.17, 95% CI, 1.15 – 4.09).

Table 25. Factors associated with antibiotic prescribing for viral URI patients
(n=4,107)

Characteristics	Antibiotic prescribed (%)	Crude OR (95% CI)	Adjusted OR ^a (95% CI)
Gender			
Male	779 (64.9)	1.41 (1.20 - 1.64)	1.47 (1.26 - 1.72)
Female	1,698 (58.4)	Referent	Referent
Age			
18-40 yr.	1,255 (68.9)	3.95 (3.28 - 4.77)	3.62 (2.92 - 4.50)
41-60 yr.	734 (59.4)	2.29 (1.89 - 2.78)	2.17 (1.76 - 2.68)
>60 yr.	488 (46.5)	Referent	Referent
Payment type ^b			
Self-payment	1,518 (65.5)	1.96 (1.70 - 2.27)	1.19 (1.00 - 1.40)
Free of charge	954 (53.5)	Referent	Referent
Physician employment status			
Part-time	2,041 (62.8)	2.32 (0.84 - 6.41)	2.58 (0.85 - 7.85)
Full-time	436 (51.0)	Referent	Referent

^a adjusted for other significant variables in the model; OR denotes odds ratio, CI denotes confidence interval

^b Patients paying out of pocket or patients insured under other health plans than the national health plan are classified as self-pay patients; patients insured under the national health plan are classified as free of charge.

II.5 Cost of URI Treatment

The average cost of treating bacterial URI was greater than the cost of treating viral URI (80 baht versus 46 baht per case, a difference of approximately USD\$0.85). Patients who received antibiotics paid 44-53 baht more per prescription than patients who did not receive antibiotic treatment.

III. PATTERN OF ANTIBIOTIC DISPENSING AMONG DRUG SELLERS

III.1 Characteristics of Drug Stores and Drug Sellers

A simulated client method by trained pharmacy students was done in 53 drug stores around the study community. Most of the surveyed drug stores were located on a main road where both community members and outsiders passed by. Despite the law that says every modern pharmacy (Type 1 drug store) should have a pharmacist on duty, only 7 (13.2%) surveyed drug stores had drug dispensers that were pharmacists.

Table 26. Characteristics of drug stores and drug sellers

Characteristic	Number of drug store (%)
Location of drug store	
In community	14 (26.4)
In or around flats	9 (17.0)
Near main road	30 (56.6)
Pharmacist on duty	7 (13.0)
Gender of drug seller: Female	30 (57.7)

III.2 Questions Asked Before Dispensing

The average number of questions asked were 5.45 ± 2.89 (range 0-11).. There were only 3 (5.7%) drug stores that did not ask any question before dispensing drugs. Questions related to symptoms have been asked frequently. The four main questions that were asked included a check if a patient had a cough, runny nose, sore throat and fever. Questions related to medicine were asked as well, but most were related to preference of simulated client on type and amount of medicine to purchase. Despite the numbers of questions asked about symptoms, most of them failed to ask critical questions to clarify type of infection, especially for Group A Streptococcal sore throat (Table 27), and to exclude severe diseases in order to refer their patient to a physician (e.g. maximillar toothache?, ear pain?, respiratory problem?, chest pain?)

Table 27. Critical questions asked by drug sellers to identify bacterial URIs (n=53)

Possible diagnosis	Critical questions	Number of drug store (%)
Strep throat	Cough?	42 (79.2)
	Sore throat?	37 (69.8)
	Who is the patient? (age, gender)	19 (35.8)
	High fever?	2 (3.8)
	Tender anterior cervical adenopathy	0 (0)
	Tonsillar exudates	0 (0)
Sinusitis	Purulent nasal discharge/ characteristic of mucus	8 (15.1)
	Maxillary toothache	0 (0)
	Poor response to decongestants	0 (0)
	History of colored discharge	0 (0)

Other questions related to symptoms and medicine that were frequently asked include ‘runny nose?’ (77.4%), ‘fever?’ (67.9%), ‘phlegm?’ (35.8%), ‘headache?’ (20.8%), ‘how many tablet would you like to buy?’ (32.1%), and ‘allergic to any medicine?’ (28.3%) (Table 28).

Table 28. Other questions asked by drug sellers before dispensing (n=53)

Questions asked	Number of drug store (%)
Questions related to symptoms	
Is he/she a big guy?	3 (5.7)
How many day of having cold?	10 (18.9)
Type of cough?	3 (5.7)
How many day of coughing?	2 (3.8)
Runny nose?	41 (77.4)
Phlegm?	19 (35.8)
Characteristic of the mucus?	8 (15.1)
Fever?	36 (67.9)
Headache?	11 (20.8)
Muscle pain or fatigue?	2 (3.8)
Only symptom of common cold, right?	3 (5.7)
Any other symptoms?	2 (3.8)

Table 28. Other questions asked by drug sellers before dispensing (n=53) (cont.)

Questions asked	Number of drug store (%)	
Questions related to drug		
How many days would you like to buy drug for?	17	(32.1)
Drug allergy?	15	(28.3)
Does patient have any drug at home?	4	(7.5)
Do you want the original or local made drug? or At what cost per pack do you want?	3	(5.7)
What is the occupation of the patient?	3	(5.7)
Any drug taken before?	1	(1.9)
Does that patient have difficulty in taking medicine?	1	(1.9)
Do you want a loosed-pack or pre-packed drug?	1	(1.9)
Does the patient take rest?	1	(1.9)

III.3 Antibiotic and Other Drugs Dispensing

All drug stores dispensed at least one drug for the simulated client with an average of 3.51 ± 1.23 (range 1-6) items per visit. More than two-thirds (75.5%) of the drug stores dispensed drug in 'Ya-chud' form, typically antibiotics, steroids mixed with other cough cold medicines in the same package. Four groups of drug frequently dispensed were antihistamine, anticough and mucolytic, analgesics/ antipyretics and antibiotics.

Antibiotics were dispensed for 66% of simulated common cold cases, among this amoxicillin was the most frequently dispensed antibiotics (68.2%) (Table 29). Other antibiotics dispensed were penicillin, cloxacillin, doxycycline, oxytetracycline, roxithromycin, and even chloroquine.

For the symptomatic drugs dispensed, many combination drugs such as anti-cough with mucolytics, antihistamine plus decongestant were dispensed more frequently than the single formulas. Steroids were dispensed 9% with cough cold remedies. More over, dipyrone (or Metamizole sodium) was also found in 7.5% of the packages although it is a restricted drug that can be obtained only by prescription and it

has been prohibited by Thai FDA in 1994 for use in combination products. Dipyrrone found in the survey came in both single tablet and in a combination tablet with paracetamol.

Table 29. Drugs received from SCM (n = 53)

Drug received	Number of drug store (%)	
Average drug cost (baht)	43.28 ± 21.71	
Received Ya-chud	40	(75.5)
Antibiotics	35	(66.0)
Amoxicillin ^a	19	(68.2)
Others antibiotics	7	(31.8)
Tetracycline	5	(9.4)
Penicillin V	2	(6.1)
Cloxacillin	2	(6.1)
Oxytetracycline	2	(6.1)
Co-trimoxazole	2	(6.1)
Roxithromycin (+amoxicillin)	1	(1.9)
Doxycycline	1	(1.9)
Chloroquine	1	(1.9)
Unknown	1	(1.9)
Symptomatic drugs, mean ± SD (range) items	2.85±1.06 (1-6)	
Anti-cough	8	(24.2)
Mucolytic	4	(12.1)
Anti-cough + mucolytic combination	11	(33.3)
Antihistamine, decongestant	10	(30.3)
Antihistamine + decongestant combination	14	(42.4)
Analgesic	19	(57.6)
Paracetamol + antihistamine combination	2	(6.1)
Steroids	3	(9.1)
Vitamins	4	(12.1)
Others ^b	2	(6.0)

^a One drug store dispensed 2 antibiotics (roxithromycin + amoxicillin)

^b Antiseptic lozenge, anti-inflammatory enzyme, Thai herbal medicine, antacid & anti-flatulence

Rate of antibiotics dispensing was significantly higher if drug sellers asked a question of cough ($p < 0.001$), runny nose ($p=0.001$), fever ($p=0.013$), and drug allergy ($p=0.01$) (Table 30).

Table 30. Antibiotic dispensing at drug stores by type of question asked (n = 53)

Antibiotic dispensing	Answers of simulated case	Question not asked		Question asked	
		No./Total (%)	No./Total (%)	No./Total (%)	No./Total (%)
Question asked *		0/3	(0.0)	35/50	(70.0)
Critical questions to identify bacterial URIs cases					
Cough? *	Some, all day	2/11	(18.2)	33/42	(78.6)
Sore throat? *	Some complain	3/16	(18.8)	32/37	(86.5)
Who is the patient?	My cousin	20/34	(58.8)	15/19	(78.9)
High fever?	Low fever	33/51	(64.7)	2/2	(100)
Questions related to symptoms					
Runny nose? *	Yes	3/12	(25.0)	32/41	(78.0)
Fever? *	Yes	7/17	(41.2)	28/36	(77.8)
Phlegm? *	I don't know	18/34	(52.9)	17/19	(89.5)
Headache?	I don't know	25/42	(59.5)	10/11	(90.0)
Duration of cold?	2-3days	27/43	(62.8)	8/10	(80.0)
Is he/she a big guy?	Normal	33/50	(66.0)	2/3	(66.7)
Type of cough?	Dry cough?	33/50	(66.0)	2/3	(66.7)
How many day of coughing?	2-3 days	33/51	(64.7)	2/2	(100)
Characteristic of the mucus?	I don't know	29/45	(64.4)	6/8	(75.0)
Muscle pain or fatigue?	Look a bit tired	35/51	(68.6)	0/2	(0.0)
Only symptom of common cold, right?	Yes	34/50	(68.0)	1/3	(33.3)
Any other symptoms?	Like what?	34/51	(66.7)	1/2	(50.0)
Questions related to drug					
Drug allergy? *	I don't know	21/38	(55.3)	14/15	(93.3)
Any drug taken before?	No	34/52	(65.4)	1/1	(100)
How many days would you like to buy a drug for? *	How many would it take to get recover?	19/36	(52.8)	16/17	(94.1)
Original or local made drug? or At what cost per pack do you want?	Which is better? Please suggest	33/50	(66.0)	2/3	(66.7)
What is patient's occupation? Does he/she need to drive/ work with machine?	Own business, working at home	34/50	(68.0)	1/3	(33.3)
Any difficulty in taking drug?	No	34/52	(65.4)	1/1	(100)
A loosed-pack or pre-packed drug?	Any is fine	34/52	(65.4)	1/1	(100)
Able to take rest?	Some	35/52	(67.3)	0/1	(0.0)
Any drug available at home?	I don't know	31/49	(63.3)	4/4	(100)

* $p < 0.05$

III.4 Advice Given by Drug Sellers

In general, about 90% of the drug sellers offered advice on drug administration, such as taking one tablet three times a day, but they seldom wrote the drugs name or its indication, nor a complete instruction of how to take drugs (Table 31). Other advice that was given by some drug stores was about self-care, however, none of the drug sellers advised about the signs and symptoms that lead to seeing a doctor, or unnecessary use of antibiotics for common cold.

Table 31. Advice given when antibiotic was dispensed and not dispensed (n = 53)

Advice given	No antibiotics (n=18) No. (%)	Antibiotics dispensed (n=35) No. (%)
Verbal advice *	15 (83.3)	35 (100.0)
Average number of verbal advice, mean \pm SD *	2.06 \pm 1.66	3.83 \pm 1.04
Advice on drug use*	14 (77.8)	34 (97.1)
If allergic, stop taking that drug	0 (0.0)	3 (8.6)
Advice about antibiotics		
Should take full course of ABT	0 (0.0)	5 (14.3)
Antibiotic resistance	0 (0.0)	3 (8.6)
Antibiotic dose not reduce cold	0 (0.0)	0 (0.0)
Advice on self-care		
Take rest *	2 (11.1)	15 (42.9)
Drink warm water	2 (11.1)	6 (17.1)
Avoid cold water	2 (11.1)	8 (22.9)
Wipe the body with wet towel if have high fever	1 (5.6)	1 (2.9)
Taking good care of yourself will rapid recovery	1 (5.6)	1 (2.9)
Come back if does not feel better after completing all medicines	0 (0.0)	3 (8.6)
Reduce smoking	0 (0.0)	0 (0.0)
Visit a doctor if have chest pain or high fever	0 (0.0)	0 (0.0)
Written advice		
Complete <i>written</i> of drugs' name/ indication and drug administration (amount, frequency, time)	5 (27.8)	9 (25.7)

*p < 0.05

The average amount of advice given when antibiotics were dispensed was significantly higher than in cases without antibiotic being dispensed (3.8 vs. 2.1, $p < 0.001$). Complete drug information, especially written advice, was not well given to the client when antibiotics were dispensed, nor was patient education about the necessity of completing a full-course treatment and about antibiotics resistance (Table 31). In the group of drug sellers who dispensed antibiotics, none of them gave verbal advice regarding complete drug administration. Ninety-one percent of drug sellers gave some verbal advice on drug use, but only 27.1% gave complete written advice of drug name and administration.

Advice on self-care was higher among those cases receiving antibiotics. This included advice to take rest, drink warm water and avoid cold water. About 8.6% of patients treated with antibiotic were asked to come back if their symptoms persisted after completing all drugs dispensed.

III.5 Factors Associated with Antibiotic Dispensing in Drug Store

Being a pharmacist did not predict antibiotic dispensing, but number and type of question did. Questions about a sore throat were the strongest predictor, both in univariate analysis (Table 32) and multivariate analysis (OR 10.2, 95%CI, 1.3-81.8) after adjusted for questions of cough, drug allergy, runny nose, phlegm, and fever.

Table 32. Univariate analysis of questions associated with antibiotic dispensing

Question asked	% antibiotic dispensing	Odds Ratio	(95% CI)
Sore throat?	86.5	27.7	(5.8 – 133.3)
Cough?	78.6	16.5	(3.0 – 90.3)
Drug allergy?	93.3	11.3	(1.4 – 95.1)
Runny nose?	78.0	10.7	(2.1 – 47.9)
Phlegm?	89.5	7.6	(1.5 – 37.9)
Fever?	77.8	5.0	(1.4 – 17.4)

III.6 Cost of URI Treatment

On average, drug dispensed for URIs treatment costs 43.3 baht/visit (5 to 118 baht). Unnecessary antibiotic dispensing nearly doubled the cost of drug (51.5 baht vs. 27.4 baht/visit) and significantly increased treatment cost ($p < 0.01$).

IV. CIVIL SOCIETY AND LOCAL URI MANAGEMENT GUIDELINES

Three main achievements of the study were the forming of “Klong Toey Health and Drug Use Network”, the local URI management guideline for community members and the URI practice guideline for physicians at the Health Center.

IV.1 Klong Toey Health and Drug Use Network

The “Klong Toey Network for Health and Drug Use” (the Network) is an established network of people and community organizations in Klong Toey Slum with the objectives of health promotion and rational drug use in community. This Network could be called ‘civil society’, as they were individuals who worked on public issues, although the issue was introduced by the research team.

The structure of the Network included the ‘Core Working Group’, the ‘Health Volunteer Team’ in each community, and the ‘Healthy Hen’ team (Figure 7). The Core Working Group had volunteers (2 each) from 22 communities that work closely with the research team in managing the rational drug use campaign in Klong Toey as a whole and coordinating between the research team and their Health Volunteer Team. This group was trained by the research team about rational drug use. They had monthly meeting to exchange and learn from others’ experiences and to share results of their campaign activities.

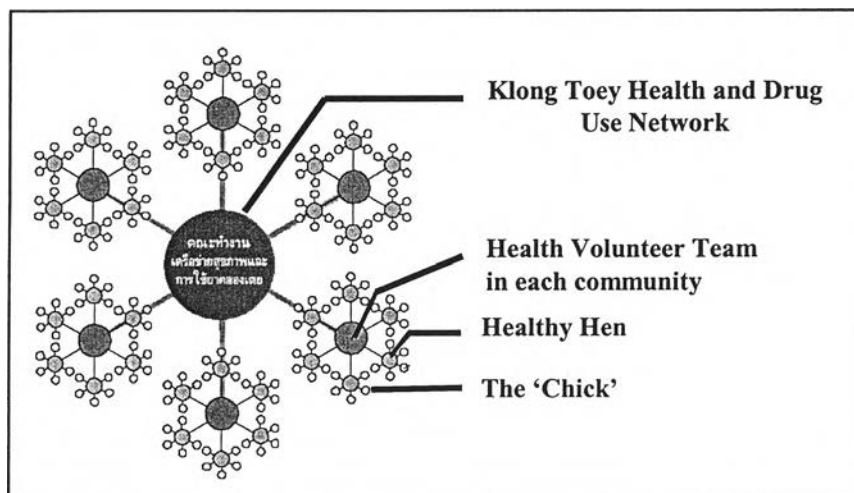


Figure 7. Structure of Klong Toey Health and Drug Use Network

There was 1-2 Health Volunteer Team in each community to work on the campaign activities and to distribute the Local URI Management Guideline and other information to their community. The research team trained the Health Volunteer Team before they started the campaign activities. This team searched and invited community members who are interested in health issue and liked to work for the public to be a 'Healthy Hen'.

The Healthy Hen teams were trained by the Health Volunteer Team and their role was to give direct information regarding the Local URI Management Guideline for community members and other updated news from the Network to their neighbors (or their 'chicks').

IV.2 Local URI Management Guideline for Community Members

The Local URI Management Guideline for Community Members (2004) was developed by the Klong Toey Health and Drug Use Network and the research team. The objective of the URI management guideline was to assist community members in practicing self-care and appropriate self-medication in order to reduce unnecessary treatment cost, promote safe-treatment and reduce development of antibiotic resistance in the community.

The Guideline is in a form of booklet, a size of half A4 paper, with four-color printed pictures (Appendix IV). Content in the 32 pages of the Guideline consisted of 6 short chapters. The first chapter is an introduction of the URI situation, and an explanation of the difficulty in differential diagnosis of viral and bacterial URIs that contributes to the problem of antibiotic overuse and economic losses to the community found by this study. The Guideline addressed antibiotic resistance as a public problem that needs the cooperation of every stakeholder in the community to solve it. Then, the Guideline introduced the 'Klong Toey Health and Drug Use Network' to community members. The second chapter described about URIs and a simple observation of symptoms to decide whether the patients are experiencing viral or bacterial URIs. Chapter Three suggested self-care treatment without drug use. Chapter Four gave indication, dose and adverse effects of symptomatic-relief drugs and some potential Thai herbal medicines for each symptom. Pictures of drugs available in community

drug stores and health centers and cartoon pictures were included for a better understanding by the readers.

Chapter Five stated clearly that antibiotics should be used only in bacterial infections diagnosed by the physicians, and patients should not purchase antibiotics at a drug store. When antibiotic are prescribed by the physician, the Guideline suggested the patient complete the full-course of treatment. A picture of a drug resistance cycle described how overuse and incomplete treatment of antibiotics affects people in community, especially the elderly, children, and patient who are at risk. The last chapter focused on wise self-treatment, where the reader was advised to learn about the 'generic' name of each drug rather than its trade name, and the selection of a drug store with a pharmacist on duty. Dangers of steroids and dipyron were mentioned and the Guideline encouraged the community members to be aware of and refuse to buy these drugs if drug sellers dispensed them.

The accompanying campaign materials developed along with the Guideline included the Health diary plus Year Planner, four 'Klong Toey Health and Medicine' newsletter, 'Drug information sheets' for symptomatic treatment and antibiotic treatment, and some brochures introducing the Network and issue of rational drug use for URI treatment to community members.

IV.3 Local URI Practice Guideline for Health Center Physicians

The physicians, pharmacist and nurses at Klong Toey Health Center developed the local URI practice guideline (2003) to use in their health center. The objective of the URI management guideline was to assist physicians in the differential diagnosis of viral and bacterial URIs and make appropriate selection of antibiotics for bacterial URI patients.

Several key components of the final local guideline suggested by the NZGG (2002) were not included. Background information, a grading of evidence, evidence summary tables, patient information, guideline documentation (target population/exclusions, sponsors, process of guideline development, date of development, measurement plan, and guideline team members), and annotated

algorithm were not included in the Guideline yet as the Health Center was still testing and revising the Guideline (during the study period). However, the Guideline has captured many critical points and it was quite applicable for the practitioners as the Guideline included both evidence-based literature review and the real situation and experiences of the physicians in URI treatment.

The Guideline, in a format of 4-page A4 paper, included the Introduction and a short summary of important points of five URI diagnoses (common cold, sore throat, acute sinusitis, acute laryngitis, and acute otitis media). The GAS score for differential diagnosis of Group A streptococcal sore throat and a clinical score for sinusitis diagnosis were introduced by this Guideline to the physicians.

The Guideline stated no use of antibiotics for common cold. It suggested that most patients with a sore throat caused from virus origin and symptom will begin to feel better within 24-48 hours. Thus it is necessary to differential diagnose the viral and bacterial cases in order to reduce antibiotic use in the health center and not to ignore patients in a risk group of developing of rheumatic heart disease and glomerulonephritis. Paracetamol was recommended for symptom relief and penicillin V was the drug of choice in streptococcal pharyngitis (10 days) or erythromycin (10 days) for case allergic to penicillin. Extended spectrum macrolides was not suggested.

For sinusitis, amoxicillin-clavulanate was the first line drug and azithromycin and clarithromycin is the second line drug for a treatment of 10-14 days and 7 days continuing treatment if symptom is better. Antibiotics were not recommended for routine prescribing in acute laryngitis cases.

The Guideline recommended amoxicillin for patients with acute otitis media. Amoxicillin-clavulanate, cephalosporin, trimethoprim-sulphamethoxazole, or erythromycin was recommended in case of penicillin resistance. The treatment duration should be 10 days, but may be shorter (5-7 days) in cases with no complication.

Along with the Guideline used in the Health Center, a rubber stamp of two clinical scores (streptococcal sore throat and sinusitis) was developed and used to assist physician's diagnosis. In addition, 'Physician's order form', 'Pharmacist advice form',

and ‘Drug information sheet’ were developed and used by the physicians and pharmacist for patient education, both in viral and bacterial URI cases. These educational materials for patients could be seen as the part of patient information although they were not stated in the Guideline of the Health Center.

V. PROCESS EVALUATION OF GUIDELINE DEVELOPMENT WITH THE INVOLVEMENT OF CIVIL SOCIETY

The process evaluation of guideline development in the study community was based on the step of guideline development and the involvement of each target group in the process. Because the attempt to develop a local URI management guideline which includes a consensus of the community members and the health providers was not presently achieved, thus, the evaluation was based on the involvement of each target group in their own guideline development process.

V.1 Participants in Guideline Development

The participants of the three target groups in their guideline development process were as in Table 33.

Table 33. Participants of each target group in the guideline development process

Community Members		Health Center	Drug Sellers
Individuals			
Community organizations		Full-time physicians	-
<ul style="list-style-type: none"> • community leaders • community committee members • natural leaders • community health volunteers • school teachers • Youth Group 	<ul style="list-style-type: none"> • Community Volunteer Group • Elderly Group • Women’s Group • Co-op Group • Anti-drug Group • Aerobic Group • Environmental Group 	Part-time physicians Pharmacist Nurses Administrators	
NGOs & Not-for-profit organizations			
<ul style="list-style-type: none"> • Duang Prateep Foundation (DPF) 	<ul style="list-style-type: none"> • Mercy Centre 		

In the group of community members, there were both involvement of the individual person, various community organizations, and the NGOs that existed in the community. Each community organization has a different role in community and some had been working together through different Government's projects. Many community members worked for different community groups at the same time, such as the person who may also be a member of Women's group as well as in Co-op group and Anti-drug group concurrently.

During the study period, there were several changes in the number of persons and groups participating in the process. Two common reasons for people to skip a meeting or to leave the group were problems of their community and their own problems. Community problems that were barriers for people or community groups included problem of housing, fire problems, and conflict between groups in community. The problem of housing is a long fighting history between the Port Authority of Thailand who is the land owner and community members who struggled to have a living place for their family. The fire problem occurs quite often in the slum area and sometimes was believed by the community to be related to the housing and expelling problem as well as the problem of illicit drugs. The conflict between several working groups in some community also made their members or group withdraw from our activities.

For the problem of each individual that blocked people from joining the guideline development process included lack of time and concern about the problems. Many community members or the leader of community organizations usually have several positions in different organization. Thus, it was difficult for them to join our activities regularly. In addition, some people failed to participate in the activities on the regular basis because of their family problems, such as need to work to earn more income and to take care of their children. As these community problems and individual problems are objective and directly affected their living status more than the problem of drug resistance, some people may not be as concerned as others about the irrational drug use problem raised by the outsider.

The health providers at Klong Toey Health Center that mainly participated in the guideline development process included 4 full-time and 3 part-time physicians, 1 pharmacist, 1 nurse, and 1 health center administrator. Although the total number of physicians was 7 persons, not all of them participated in the process concurrently as there were 2 turn overs of full-time physicians during the study period.

In the group of drug sellers, their cooperation and participation in the guideline development process was low as observed from the first meeting; only two drug store owners participated. Therefore, the approach to reach this target group has been changed and the research team was the one who carried out the process of guideline development for the drug sellers.

Although the community members, health center physicians, and drug sellers had some connection between each other, it was still difficult to encourage them to work together as a group. The community members and the health providers were linked together in the drug use system with the role of patient, physicians and drug sellers. Many community members also worked closely with the Health Center staff because they are Community Health Volunteers who needed to be trained by the Health Center every month, or they are members of the Elderly Group which perform weekly exercise at the Health Center. However, the vertical relationships and the imbalance of health information between patients and health providers were barriers for equal discussion between them.

Compared to health care providers at the health center, the drug sellers were less connected to other groups in the community. Although people usually visited drug stores for health seeking, drug sellers seldom come out from their site and participate in community activities in order to increase their relationship with the community. Between health providers, the drug sellers were not connected to the health center nor private clinics or hospitals.

V.2 Process Evaluation of Guideline Development

Although the purposed plan to promote the establishment of a civil society organization that included three target groups failed, forming of a working group for

guideline development was done in the group of community members and the group of health providers at the Health Center.

The evaluation was based on 8 steps of guideline development: 1) selecting the topic; 2) identifying the prime mover; 3) Evaluating medical literatures; 4) looking at internal data; 5) defining the gap; 6) formulating recommendations; 7) reviewing the recommendations; and 8) planning for guideline dissemination. Details of each step are presented in Chapter III and the summary of the process evaluation for each group is presented in Table 34.

Table 34. Process evaluation of guideline development

Guideline development process	Involvement of target group and activities held		
	Community Members	Health Center Physicians	Drug Sellers
1. Selecting the topic	----- (Topic selected by the research team)-----		
2. Identifying the prime mover	<p>NGO staff (and the research team) identified the prime mover through FGD, Introductory Meeting and several subsequent meetings with the community members/ groups</p> <p>Establishment of the Klong Toey Health and Drug Use Network (the Network) as the prime mover</p>	<p>Director of the Klong Toey Health Center identified the key responsible person.</p>	-
3. Evaluating medical literatures	-	<p>Literatures, samples of URI treatment guideline and campaign materials were given out to 4 physicians, a pharmacist and nurses in the meeting for their reviewing.</p>	-
4. Looking at internal data	<p>The NGO staff and community leaders helped coordinating the household survey.</p> <p>The research team presented summary of Phase I study in the FGD with the Network and other key persons from community group.</p>	<p>The research team presented summary of Phase I study to 4 physicians, a pharmacist and nurses.</p>	<p>The research team presented summary of Phase I study in the meeting where only 2 drug store owners participated</p>
5. Defining the gap		<p>Open discussion among the health providers regarding the results found, adherence to the evidence-based guidelines, and experiences of the physicians.</p>	
6. Formulating recommendations	<p>The Network and the research team formulated recommendations together through 2 formal meetings and other subsequent meetings and discussions.</p> <p>Their tacit knowledge was blended with the technical knowledge of the research team in formulating the recommendations.</p>	<p>One young medical staff was responsible for drafting the recommendations before the open discussion with other physicians.</p> <p>Two subsequent meetings were held to find a consensus among the physicians about diagnostic criteria and treatment of choice. Five physicians and a pharmacist participated in these meetings.</p>	<p>(Information obtained from the discussion during the face-to-face visit at drug stores were used by the research to formulate the recommendations)</p>

Table 34. Process evaluation of guideline development process (cont.)

Guideline development process	Involvement of target group and activities held		
	Community Members	Health Center Physicians	Drug Sellers
7. Reviewing of the recommendations	<p>Internal reviewing process was done by the members of the Network by taking home the draft of the Guideline and came back to give feedback and comments.</p> <p><i>Physicians and pharmacist of the Health Center</i> helped in reviewed the final form of the Guideline.</p> <p>More pictures of drug sample and cartoon were added with some rearrangement of the Guideline section, changes of wordings and adding of some explanation.</p>	<p>Internal reviewing process was done in 5 subsequent meetings by physicians, a pharmacist and nurses.</p> <p>Physicians who missed the meeting were assumed to agree with their colleagues' suggestions.</p>	-
8. Planning for guideline dissemination	<p>The Network and different community organizations planned for the guideline dissemination and other intervention through the Network monthly meetings and meetings of the Health Volunteer Team in each community.</p> <p>15 in 22 communities (68%) consistently involved in the monthly meeting of the Network.</p> <p>11 communities (50%) continued carry out the activities in their community.</p>	<p>4 in 7 physicians (57%) consistently involved in the meetings and discussions; 1 physician and a pharmacist were in all meetings held for the reviewing of the Guideline and planning of guideline dissemination.</p>	- (Done by the research team)

Each target group had different levels of involvement in the guideline development process. In the group of community members, the NGOs and local organizations played an important role in identifying and coordinating the process at the initial step of guideline development. Later when the Klong Toey Health and Drug Use Network was established, the Network played role in identifying gap between current services and their expectation, formulating and reviewing of the recommendations, and planning for guideline dissemination. The research team had to

coordinate and facilitate the Network in all steps of guideline development as the working group was located in many communities and because they lacked of managerial skill and group working skill.

Process of guideline development was convenient at the health center. The physicians and other health providers worked in the same place, met each other on daily basis, and had quite similar level of knowledge about health and drug use, thus, it was convenient for them to set a meeting and have equal discussion together. In addition, the working group is in a manageable size, not too big as the Klong Toey Health and Drug Use Network. Although the research team selected the topic of guideline for them, but the rest of the steps involved their participation in guideline development. The role of research team for the working group at the health center was mostly a facilitator giving support on academic materials and guiding them with some technical support, as they were not yet familiar with research process.

For the guideline development process in drug sellers, there was no participation of the drug sellers except in the first meeting where only two drug store owners participated. Hence, the research team was responsible for every step of guideline development for drug sellers started from the topic selection until the planning for guideline dissemination.