

2023

Exploring the implementation of national strategic plan on antimicrobial resistance in the appropriate use of antimicrobials

Shinnawat Saengungsumalee
Faculty of Pharmaceutical Sciences

Follow this and additional works at: <https://digital.car.chula.ac.th/chulaetd>



Part of the [Pharmacy and Pharmaceutical Sciences Commons](#)

Recommended Citation

Saengungsumalee, Shinnawat, "Exploring the implementation of national strategic plan on antimicrobial resistance in the appropriate use of antimicrobials" (2023). *Chulalongkorn University Theses and Dissertations (Chula ETD)*. 10369.

<https://digital.car.chula.ac.th/chulaetd/10369>

This Thesis is brought to you for free and open access by Chula Digital Collections. It has been accepted for inclusion in Chulalongkorn University Theses and Dissertations (Chula ETD) by an authorized administrator of Chula Digital Collections. For more information, please contact ChulaDC@car.chula.ac.th.

**EXPLORING THE IMPLEMENTATION OF NATIONAL
STRATEGIC PLAN ON ANTIMICROBIAL RESISTANCE IN
THE APPROPRIATE USE OF ANTIMICROBIALS**

Mr. Shinnawat Saengungsumalee



**A Thesis Submitted in Partial Fulfillment of the Requirements
for the Degree of Master of Science in Social and Administrative
Pharmacy
Department of Social and Administrative Pharmacy
Faculty Of Pharmaceutical Sciences
Chulalongkorn University
Academic Year 2023**

การสำรวจการนำแผนยุทธศาสตร์แห่งชาติเพื่อจัดการการค้าอียาต้านจุลชีพไปปฏิบัติในการใช้ยาต้าน
จุลชีพอย่างเหมาะสม



วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาวิทยาศาสตรมหาบัณฑิต
สาขาวิชาเภสัชศาสตร์สังคมและบริหาร ภาควิชาเภสัชศาสตร์สังคมและบริหาร
คณะเภสัชศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย
ปีการศึกษา 2566

Thesis Title	EXPLORING THE IMPLEMENTATION OF NATIONAL STRATEGIC PLAN ON ANTIMICROBIAL RESISTANCE IN THE APPROPRIATE USE OF ANTIMICROBIALS
By	Mr. Shinnawat Saengungsumalee
Field of Study	Social and Administrative Pharmacy
Thesis Advisor	Associate Professor ANUCHAI THEERAROUNGCHAISRI, Ph.D.
Thesis Co Advisor	Associate Professor YUPADEE SIRISINSUK, Ph.D.

Accepted by the FACULTY OF PHARMACEUTICAL SCIENCES, Chulalongkorn University in Partial Fulfillment of the Requirement for the Master of Science

..... Dean of the FACULTY OF PHARMACEUTICAL SCIENCES
(Professor PORNANONG ARAMWIT, Ph.D.)

THESIS COMMITTEE

..... Chairman
(Associate Professor Police Lieutenant PUREE ANANTACHOTI, Ph.D.)

..... Thesis Advisor
(Associate Professor ANUCHAI THEERAROUNGCHAISRI, Ph.D.)

..... Thesis Co-Advisor
(Associate Professor YUPADEE SIRISINSUK, Ph.D.)

..... Examiner
(Associate Professor Police Captain TANATTHA KITTISOPEE, Ph.D.)

..... External Examiner
(Assistant Professor Niyada Kiatying-angsulee, Ph.D.)

ชินวัจน์ แสงอังคณาภิ : การสำรวจการนำแผนยุทธศาสตร์แห่งชาติเพื่อจัดการการดื้อยาต้านจุลชีพ
ไปปฏิบัติในการใช้ยาต้านจุลชีพอย่างเหมาะสม. (EXPLORING THE
IMPLEMENTATION OF NATIONAL STRATEGIC PLAN
ON ANTIMICROBIAL RESISTANCE IN THE
APPROPRIATE USE OF ANTIMICROBIALS) อ.ที่ปรึกษาหลัก : รศ.
ภก. ดร.อนุชัช ธีระเรืองไชยศรี, อ.ที่ปรึกษาร่วม : รศ. ภญ. ดร.ยุพดี ศิริสินสุข

ในเดือนสิงหาคม พ.ศ. 2559 คณะรัฐมนตรีได้เห็นชอบแผนยุทธศาสตร์ชาติว่าด้วยการจัดการ
การดื้อยาต้านจุลชีพ พ.ศ. 2560-2564 ยุทธศาสตร์ที่ 5 คือการสร้างความรู้เรื่องการดื้อยาต้านจุลชีพและ
ความตระหนักรู้ในการใช้ยาต้านจุลชีพอย่างเหมาะสมในหมู่ประชาชน การศึกษานี้มีวัตถุประสงค์เพื่อค้นหา
กระบวนการดำเนินงานและกิจกรรมของยุทธศาสตร์ชาติว่าด้วยการสร้างความรู้เรื่องการดื้อยาต้านจุลชีพ และ
ความตระหนักรู้ในการใช้ยาต้านจุลชีพอย่างเหมาะสมในหมู่ประชาชน และปัจจัยที่ส่งผลต่อกระบวนการนำ
ยุทธศาสตร์ที่ 5 ไปปฏิบัติ การศึกษานี้แบ่งออกเป็น 2 ระยะ คือระยะที่ 1 เป็นการศึกษาเชิงสำรวจเพื่อค้นหา
กระบวนการดำเนินการและกิจกรรมของยุทธศาสตร์ที่ 5 ระยะที่ 2 คือการสัมภาษณ์เชิงลึกกับผู้ให้ข้อมูลหลัก
เพื่อค้นหาปัจจัยที่ส่งผลต่อกระบวนการนำยุทธศาสตร์ที่ 5 ไปปฏิบัติ ผลการศึกษาจากระยะที่ 1 พบว่าผู้ตอบ
แบบสำรวจดำเนินกิจกรรมด้วยการอบรมให้ความรู้ในพื้นที่มากที่สุด ผู้ตอบสำรวจใช้แผ่นพับและโปสเตอร์
เพื่อเผยแพร่ความรู้มากที่สุด กลุ่มเป้าหมายหลัก ได้แก่ บุคลากรสุขภาพ ผู้ป่วย และอาสาสมัครประจำ
หมู่บ้าน การจัดกิจกรรมให้ความรู้ส่วนใหญ่ให้ความสำคัญประเด็นความรู้และความตระหนักรู้ในทุกประเด็น
โดยมีคะแนนเฉลี่ยมากกว่า 4 ใน 5 ระยะที่ 2 ผลการศึกษาพบว่ามี ปัจจัย 10 ประการที่ส่งผลต่อ
กระบวนการนำแผนยุทธศาสตร์ฯไปปฏิบัติ ได้แก่ นโยบาย เครื่องมือ กลุ่มเป้าหมาย บุคลากร ผู้บริหาร การ
ประชาสัมพันธ์ การประสานงาน ทรัพยากร กระบวนการทำงาน และสิ่งแวดล้อม

จุฬาลงกรณ์มหาวิทยาลัย
CHULALONGKORN UNIVERSITY

สาขาวิชา	เภสัชศาสตร์สังคมและบริหาร	ลายมือชื่อนิติ
	
ปีการศึกษา	2566	ลายมือชื่อ อ.ที่ปรึกษาหลัก
	
		ลายมือชื่อ อ.ที่ปรึกษาร่วม
	

6176355133 : MAJOR SOCIAL AND ADMINISTRATIVE PHARMACY

KEYWORD: National Strategic Plan on Antimicrobial Resistance, The Implementation Process and Activities of Strategy 5, Factors Contributing to the Implementation Process and Activities of Strategy 5

Shinnawat Saengungsumalee : EXPLORING THE IMPLEMENTATION OF NATIONAL STRATEGIC PLAN ON ANTIMICROBIAL RESISTANCE IN THE APPROPRIATE USE OF ANTIMICROBIALS.

Advisor: Assoc. Prof. ANUCHAI THEERAROUNGCHAISRI, Ph.D. Co-advisor: Assoc. Prof. YUPADEE SIRISINSUK, Ph.D.

In August 2016, the Cabinets of Thailand approved the National Strategic Plan on Antimicrobial Resistance 2017-2021. The Strategy 5 of the National Strategic Plans aimed to enhance the public's understanding of antimicrobial resistance (AMR) and promote awareness of appropriate use of antimicrobials (AMU). This study aims to investigate the implementation process and activities of Strategy 5 and the factors contributing to the implementation process and activities of Strategy 5. The study was divided into 2 phases. Phase I used a descriptive survey study to answer the implementation process and activities of Strategy 5. Phase II used an in-depth interview with key informants to find the factors contributing to the implementation process and activities of Strategy 5. The results from phase I found that knowledge training is the most commonly used method among respondents. The respondents used educational brochures and posters to disseminate AMR and AMU knowledge. The target groups for which the respondents organized activities were public health professionals, patients, and village health volunteers. The survey respondents highlighted knowledge and awareness in all areas emphasized by strategy 5, achieving an average score of more than 4 out of 5. Phase II revealed the following 10 factors contributing to the outcomes of the implementation process and activities of Strategy 5, including the policy, civil society network, target groups, personnel, executives, public relations, coordination, resources, work mechanism, and environmental factors.

Field of Study:	Social and Administrative Pharmacy	Student's Signature
Academic Year:	2023
		Advisor's Signature
	
		Co-advisor's Signature
	

ACKNOWLEDGEMENTS

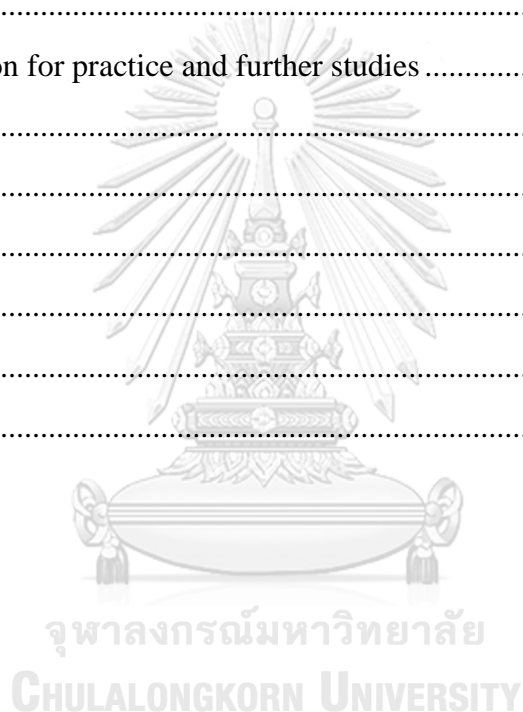
This thesis would not have been possible unless the help, guidance, and support from Dr. Anuchai Theeraruangchaisri and Dr. Yupadee Sirisinsuk, my advisors, for their advice, support, and friendship during my pursuit of Msc. I thank Dr. Puree Anantachoti and Dr. Tanattha Kittisopee, who shaped my research idea. I want to thank Dr. Niyada Kiatying-angsulee for her guidance, care, and support. I want to thank the Thai Health Promotion Foundation, Drug System Monitoring and Development Center (DMD), Chulalongkorn University for their funding, Dr. Yothin Sawangdee, Dr. Sanguan Lerkiatbundit, Dr. Suyanee Pongthanani, Dr. Kamolwan Tantipiwattanasakul, Dr. Praneed Songwattana, Dr. Suntaree Watcharadamrongkun, and Dr. Win Winit-Watjana for their academic support. I want to thank Ms. Zar Ni Win, Ms. Supapitch Suphab, Ms. Kamonwan Damrongphiwat, and Mrs. Wachana Tungkwampian. I want to thank Khun Suchanun Pimpang for her support. I want to thank Dr. Chalerm Sri Pummangura (in memory), who always supported me. I want to thank my family, my partner (Nattakarn Thongtae), and my children (Plawhan, Ocean, and Sea), whose love and guidance are with me in whatever I pursue.

Shinnawat Saengungsumalee

TABLE OF CONTENTS

	Page
ABSTRACT (THAI)	iii
ABSTRACT (ENGLISH).....	iv
ACKNOWLEDGEMENTS.....	v
TABLE OF CONTENTS.....	vi
LIST OF TABLES.....	viii
LIST OF FIGURES	ix
LIST OF ABBREVIATIONS.....	x
CHAPTER I INTRODUCTION.....	1
Background and rationale.....	1
Research objectives	5
Scope of the study.....	6
Conceptual framework.....	6
Definition of terms.....	8
Ethical consolidation	8
CHAPTER II LITERATURE REVIEW	9
Situation in antimicrobial resistance.....	9
Worldwide National Action Plan for Combating Antimicrobial Resistance.....	11
Strategic Plan for AMR Management in Thailand 2017 – 2021	17
Public Policy Implementation.....	26
Knowledge, awareness, and behavior of people on AMR and appropriate use of antimicrobial drugs	31
CHAPTER III METHODS	32
Phase I: Investigation of the implementation process and activities of the National Strategic Plan on AMR Strategy 5	33
Phase II: Investigation of factors contributing to the implementation process and activities of the National Strategic Plan on AMR Strategy 5	37

CHAPTER IV RESULTS.....	41
Phase I: Investigation of the implementation process and activities of the National Strategic Plan on AMR Strategy 5	41
Phase II: Investigation of factors contributing to the implementation process and activities of the National Strategic Plan on AMR Strategy 5	49
CHAPTER V DISCUSSION AND CONCLUSION	68
Discussion.....	68
Limitation of the study.....	79
Conclusions.....	79
Recommendation for practice and further studies	82
REFERENCES	83
APPENDIX.....	90
APPENDIX I	91
APPENDIX II.....	94
APPENDIX III.....	103
VITA.....	107



LIST OF TABLES

	Page
Table 1 GAP on AMR objective one framework ^[22]	13
Table 2 Data triangulation check	39
Table 3 Respondents' affiliation type.....	42
Table 4 Respondents' occupation.....	42
Table 5 Respondents' experience in promoting AMR knowledge and raising awareness of the rational use of antimicrobials.	42
Table 6 Respondents' involvement in Thailand's National Strategic Plan on Antimicrobial Resistance 2017-2021 (n=284).....	44
Table 7 Activity types used to disseminate knowledge about AMR and the appropriate use of antimicrobials (n=249).....	44
Table 8 Media types used to disseminate knowledge about AMR and the appropriate use of antimicrobials (n=249).....	46
Table 9 Settings and target groups of the activities (n=249)	47
Table 10 Frequency of the activity arrangement (n=249)	47
Table 11 Importance of activity content related to AMR knowledge or AMU awareness rated by the respondents in four groups (n=249)	48
Table 12 Characteristics of 23 key informants	49
Table 13 Ten factors with main themes.....	50

LIST OF FIGURES

	Page
Figure 1 Conceptual Framework	7
Figure 2 The One Health approach ^[2]	21
Figure 3 The triangle that moves the mountain ^[2]	22
Figure 4 Results of the implementation of the policy ^[11]	27
Figure 5 Summary of the factors obtained from the integration between deductive and inductive theory ^[11]	29
Figure 6 Research methodology	32



LIST OF ABBREVIATIONS

AMR	Antimicrobial Resistance
AMU	Antimicrobial Use
ASEAN	Association of Southeast Asian Nations
CARB	Combating Antibiotic-Resistant Bacteria
DA	Department of Agriculture
DMD	Drug System Monitoring and Development Center
EARS-Net	European Antimicrobial Resistance Surveillance Network
ECDC	European Centre for Disease Prevention and Control
EU	European Union
FAO	The Food and Agriculture Organization of the United Nations
FDA	The Food and Drug Administration
GAP	Global Action Plan
HED	The Health Education Division
HITAP	The Health Intervention and Technology Assessment Program
HSSD	The Health Service Support Department
ICAMR	Inter-agency Committee on Antimicrobial Resistance
iHPP	International Health Policy Program
IPC	Infection Prevention and Control
ISARIC	International Severe Acute Respiratory and Emerging Infections Consortium
Lao PDR	Lao People's Democratic Republic
MDROs	Multidrug Resistance Organisms

LIST OF ABBREVIATIONS

MoPH	Ministry of Public Health
NAP	National Action Plan
NARST	National Antimicrobial Resistance Surveillance Center, Thailand
NHCO	National Health Commission Office
NSP-AMR	Thailand's National Strategic Plan on Antimicrobial Resistance 2017-2021
TrACSS	Tripartite AMR Country Self-Assessment Survey
THPF	Thai Health Promotion Foundation
OIE	World Organization for Animal Health
U.K.	The United Kingdom
U.N.	The United Nation
U.S.	United States
WHA	World Health Assembly
WHO	World Health Organization
WAAW	World Antimicrobials Awareness Week

CHAPTER I

INTRODUCTION

Background and rationale

The rapid spread of antimicrobial-resistant bacteria, also known as Superbugs, significantly increases infectious diseases that cannot be cured. In addition, the situation of antimicrobial drug research and development has become worse. In 2019, The World Health Organization stated that only 32 were clinically developed, and only 6 were considered innovations. A lack of access to quality antimicrobial medicines remains a significant concern and affects the healthcare system in all countries^[1].

O'Neill has estimated that antimicrobial resistance infections will cause at least 70,000 people to die each year and climb to 10 million deaths by 2050 if people do not change their antibiotics. People continue suffering from the current antibiotics and turn to failed treatments. The cost of AMR to national economies and the health systems of many countries is crucial as it affects patients or their caretakers since the patients stay in the hospital for a more extended period, and a higher cost is needed for intensive care. For example, in Thailand, a study showed that AMR caused 38,481 hospital deaths in 2010, and 19,000 extra deaths are attributable to multidrug-resistant bacterial infections increasing yearly ^[2]. Thailand has a population of approximately 70 million people. Accordingly, the estimated number of drug-resistant patients is 3 to 5 times more than the United States and the European Union, with a population of approximately 300 million and 500 million, respectively^[3]. Irrational use of antimicrobial drugs^[4] included not taking them prescribed by the doctor, not taking antibiotics as prescribed, or even

buying them yourself. All are causes of AMR because the patient did not comply with the drugs [5-7]. Therefore, increasing AMR and the risk of adverse drug reactions affect the national economies [2].

In 2014, the Ministry of Public Health in Thailand arranged a meeting with a Coordinating and Integrating Committee for situational analysis of Antimicrobial Resistance in Thailand. As a result, it is revealed that Thailand has a system for AMR management. However, there is a lack of unity and clear working directions owing to an absence of specific national strategies on AMR. Therefore 2015, the committee, which includes representatives from the Ministry of Public Health and other corporations, was established. The committee's mission is to develop Thailand's National Plan on AMR to promote multisectoral collaboration at the country level to ensure the full problem-solving potential of AMR. On August 17, 2016, Thailand's National Strategic Plan on Antimicrobial Resistance 2017-2021^[2] was approved by the cabinets. This Strategic Plan is composed of 6 strategies as follows: 1) AMR surveillance system using a 'One-Health' approach, 2) Regulation of antimicrobial distribution, 3) Infection prevention and control and antimicrobial stewardship in humans, 4) AMR prevention and control and antimicrobial stewardship in agriculture and animal 5) Public knowledge on AMR and awareness of appropriate use of antimicrobials 6) Governance mechanism to develop and sustain AMR-related actions.

Strategy 5 has three strategy actions: 1. promote the role of organizations, civil society networks, and mass media to strengthen understanding of antimicrobial resistance and appropriate antimicrobial use. 2. promote and develop health literacy and awareness of antimicrobial resistance and the appropriate use of antimicrobial drugs,

especially children, youth, and working-age groups. 3. strengthen community and partnerships. The actions are developing a curriculum on AMR knowledge and awareness of AMU for target groups, developing the leadership potential of health, and promoting awareness of appropriate antimicrobial use for people. In addition, under strategy 5, there is an additional specific action plan, namely the action plan to promote AMR knowledge and awareness on the use of antimicrobial drugs to the people 2019-2021. There are indicators, target values, output, main activities, target groups, and organizations responsible for the strategies set out in the strategic plan in the action plan. The action plan was developed through a brainstorming meeting of the Subcommittee three times on June 13, 2019, June 20-21, 2019, and July 10-12, 2019. The Subcommittee created an action plan^[2].

Mid-term evaluation report Thailand's National Strategic Plan on Antimicrobial Resistance 2017-2021, when the 2nd phase was completed in November 2019. Health Intervention and Technology Assessment Program (HITAP) has evaluated the implementation of the strategic plan to develop proposals to improve operations in driving the next strategic plan. The evaluation results indicated that there were challenges in implementing Strategy 5 due to the absence of publicity through mass media platforms like newspapers, radio, and television. Additionally, each activity was limited to duration of only two years. Moreover, by the end of 2021, achieving the goal of ensuring a significant percentage of the population is knowledgeable about antimicrobial resistance and its appropriate use proved to be difficult ^[8]. Although the policy has an evaluation, it is evaluated from the people side. Implemented the policy

to the local area have not involved in the evaluation and not yet studied the contributing factors that can make public policy succeed or fail.

The public policy (Strategy 5) has three leading responsible organizations: the Department of Health Service Support, the Thai Health Promotion Foundation, and the National Health Assembly. The Department of Health Service Support is the leading organization to drive Strategy 5 at the local level. Various networks have organized activities to educate and raise awareness by health professionals such as hospital pharmacists, public health office pharmacists, public health technical officers, health volunteers, and health village volunteers at the local level. The Department of Health Service Support has carried out Strategy 5 through health volunteers and health village volunteers. The health volunteer and health village volunteers are the responsible groups who take care of health problems in the community. Therefore, the organizations involved in the implementation of public policy (Strategy 5) are public health offices and hospitals under the Ministry of Public Health. In Bangkok, the Health Department of the Bangkok Metropolitan Administration is the unit responsible for health volunteers and health village volunteers. From the Mid-term evaluation report, some issues should be further studied. What are the activities that the responsible organization provide? What factors positively or negatively impacted public policy (Strategy 5) implementation? The 2019 Health and Welfare Survey reported on the knowledge and awareness of the appropriate use of antibiotics among the Thai population. This was done to monitor the progress of the Strategic Plan's implementation. The questionnaire was modeled after Flash Eurobarometer 444^[9]. The results of the survey show an increase in knowledge (Survey results in 2019 were 24.3%, an

increase from the survey results in 2017 (23.7%)), and the mean score of awareness on AMR and AMU was 3.3 of 5 points^[10]. While the knowledge section of the survey presented various questions, respondents still frequently chose incorrect answers. For instance, on the statement "Antibiotics kill viruses," 49.8% of participants chose the wrong answer in 2017. By 2019, this number had increased slightly to 50.7%. This indicates that even though there's an overall increase in knowledge, certain misconceptions persist among the respondents. No study has yet explored the implementation process and activities of the National antimicrobial strategy, nor the factors that contribute to the strategy's outcomes. The research question were what the implementation process and activities of the National antimicrobial strategy and the factors contributing to the implementation process and activities of the National Strategic Plan on AMR Strategy 5 at the provincial level are. Therefore, this study would like to investigate the implementation process and activities of the National antimicrobial strategy and the factors contributing to the implementation process and activities of the National Strategic Plan on AMR Strategy 5.

Research objectives

This study is aimed to:

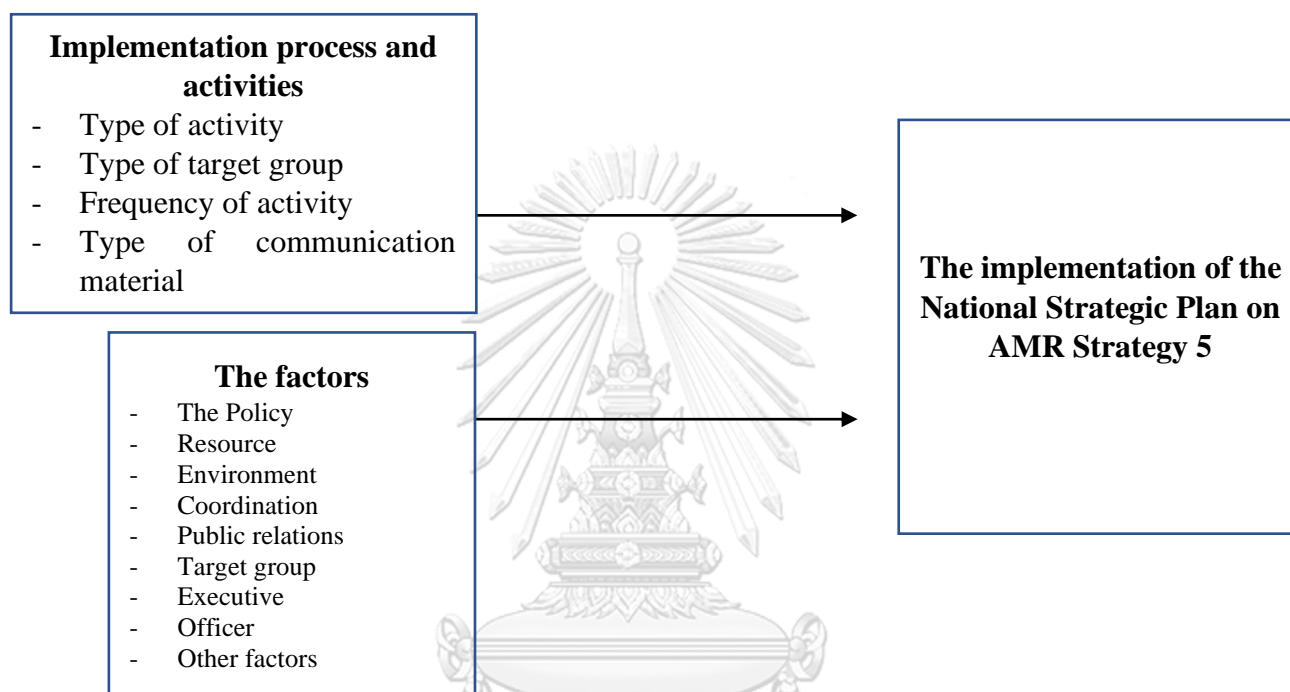
- 1) To investigate the implementation process and activities of the National Strategic Plan on AMR Strategy 5.
- 2) To investigate the factors contributing to the implementation process and activities of the National Strategic Plan on AMR Strategy 5.

Scope of the study

This study explored the implementation process and activities of the related organizations involved in the policy's implementation of the National Strategic Plan on AMR strategy 5 in Bangkok through the health department of the Bangkok metropolitan administration and the provincial area through provincial health offices. The selected provinces will be selected to do in-depth interviews to explore the factors contributing to the implementation process and activities.

Conceptual framework

This research adopts an integrated theory of public policy implementation developed by Chandarasorn^[11] and from the literature review^[12, 13] to provide a conceptual framework for investigating the factors contributing to the implementation process and activities of the National Strategic plan on the appropriate use of antimicrobials. The implementation process and activities in the conceptual framework includes several activities, activity name, type of communication material frequency of activities. For the factors contribute to the implementation process and activities are the policy, resource, environment, communication, public relations, target group, executive, and the officer. Figure 1 shows the conceptual framework adapted from the literature review to use in this study.



จุฬาลงกรณ์มหาวิทยาลัย
Figure 1 Conceptual Framework
CHULALONGKORN UNIVERSITY

Definition of terms

- 1) Contributing factors are the factors that affect the policy implementation process (Strategy 5).
- 2) Antimicrobial resistance is the ability of bacteria to grow or survive even after exposure to antimicrobial drugs at concentrations that are usually sufficient to inhibit or kill that strain of the bacteria.
- 3) The policy is policy importance, clear policy objectives and congruence with organizational missions.
- 4) The coordination is internal and external coordination among organizations.
- 5) The resources is allocated budget, printed and video media, and media production by the central authority (Ministry of Public Health)
- 6) The environment is the economic and social aspects, political issues, and newly emerging diseases.
- 7) The public relation is channel of knowledge dissemination.
- 8) The executive is motivation built by executives, and executive support.
- 9) The personnel is number of manpower, and staff competency and teamworking.
- 10) The target group is cooperation of target groups.

Ethical consolidation

The research was approved by the Research Ethics Review Committee for Research Involving Human Research Participants Group 1, Chulalongkorn University (Reg. No. COA 027/2022).

Some related literature needed to be further reviewed to clarify the knowledge gaps and identify relevant issues for discussion in Chapter 2.

CHAPTER II

LITERATURE REVIEW

This chapter conducted the literature review on the implementation process and activities of public policy analysis (Strategy 5) to improve public knowledge and awareness about antimicrobial resistance and appropriate antimicrobial use. The literature reviews covered antimicrobial resistance, National Action Plan for Combating Antimicrobial Resistance, and related research.

Situation in antimicrobial resistance

In 1928, Alexander Fleming accidentally discovered an antibiotic. He accidentally dropped penicillium into a bacterial tray and then found that the substance in penicillin could kill the bacteria. Within 12 years of discovering decreased bacterial mortality rates, there was a significant turning point in world history. Notably, the survival rates of infants and mothers from cesarean sections improved because of antibiotics^[14]. However, bacteria and other microbes have evolved resistance. Antimicrobial resistance arises when bacteria gain the capability to withstand antibiotics meant to eliminate them. Therefore, AMR occurs when bacteria adapt and grow in the presence of antimicrobial drugs^[15]. The development of resistance is linked to the frequency of AMU. Because many antibiotics belong to the same class, then it may cause resistance in all active groups. The resistance that arises in microbes can also spread rapidly and unpredictably; for example, the exchange of genes between other bacteria types can affect antimicrobial treatment for infections and diseases^[16]. Various AMR can spread in human and animal populations through food and the environment, and their transmission is

influenced by human and animal trade, travel, and migration. Antimicrobial resistance can be found in food products that humans need to consume^[17]. As antibiotic resistance grows, the original antibiotic cannot be used; it needs to increase the dose of the antibiotic or switch to a higher class of antibiotics, causing the patient to lose the opportunity to use antibiotics, including raising expenses. One of the causes of AMR is the excessive use of antibiotics that make humans have low immunity; the aging population is increasing, and there is a high risk of infection because they have low immunity^[18].

Antimicrobial resistance (especially antibiotic resistance) is spreading, and is less likely to develop new antibiotics in the short term. Nonetheless, there is now great awareness of the need and political support for action to combat AMR. The support is multi-sectors, and cooperation is strengthened among relevant sectors, particularly health in human, animal, and agriculture. The need for urgent action is in line with preventive measures. Action and collaboration between national and international levels should not be hindered by knowledge gaps^[2].

The report from the National Surveillance System for Antimicrobial Resistance, Thailand (NARST) indicates that antimicrobial resistance in Thailand is both persistent and on the rise. Antimicrobial resistance rate of bacteria in the years 2000-2020 show that the rate of vancomycin-resistant in the enterococci group in 2020 *E. faecium* at IPD 9.1 %, OPD 13 %, and ICU 10.1. *E. faecalis* at IPD 0.4 %, OPD 0.2 %, and ICU 0.1 %. Rate of *Staphylococcus spp.* resistant in erythromycin 35.5 %, oxacillin (cefoxitin) 34.1%, clindamycin 29.5 %, and ciprofloxacin 22.4 %. For imipenem and meropenem resistance in *Acinetobacter spp.* Found rate of resistance was 72.5 % and 71.8 %, respectively.

respectively. In *Pseudomonas aeruginosa* rate of resistance is 21.5 % and 18.2 %, respectively. *E. coli* has rate of resistant in ampicillin 82.9 %, ciprofloxacin 54.5 %, gentamicin 32.1 % and Imipenem 2.8 % etc.^[19]

During the 2020 SARS-CoV-2 virus outbreak. This epidemic could be attributed to higher antimicrobial use and long-term AMR. On the other hand, a greater focus on public hygiene, such as hand washing and efforts to limit contact between patients, including social distancing, could substantially reduce the spread of antimicrobial resistance. However, the spread of antimicrobial resistance may occur and become worse. Because of the increasing rate of prescribing antimicrobial drugs, for example, the international severe acute respiratory and emerging infections consortium (ISARIC) was founded. However, few reports of bacterial infections, but 62 % of infected COVID-19 have received antibiotics. Besides, the order is too much, and irrational was causing the spread of other pathogens and multidrug resistance organisms (MDROs)^[20]

Worldwide National Action Plan for Combating Antimicrobial Resistance.

The problem of AMR threatens the core of modern medicine and the sustainability of the public health sectors around the world. Margaret Chan^[21] highlighted that in response to this crisis, the World Health Assembly in May 2015 adopted a global action plan on antimicrobial resistance. This plan delineates five key objectives:

- 1) To raise awareness and knowledge of AMR through communication and education.
- 2) To strengthen the evidence base through research.

- 3) To reduce the incidence of infection.
- 4) To optimize the AMU in humans and animals.
- 5) To develop the economic case for sustainable investment.

The action plan emphasizes the "one health" approach, which involves coordination among international sectors. The action plan becomes aware of the management of both the factors of the national resource to combat AMR and economic factors. The GAP goal is to ensure that infectious disease treatment continues with effective and safe drugs certified for quality, used responsibly, and everyone can access it. It is expected that other countries will develop their national action plans on antimicrobial resistance according to the global action plan. These are set out below with the Member States, the Secretariat, international organizations, and other partners. This GAP provides the framework for national action plans to fight AMR. It sets out the various stakeholders' critical efforts, using an expanding approach to fight AMR over 5-10 years ^[22].

In GAP on AMR, objective one is to increase awareness of AMR and encourage behavioral change via public communication programs that target different audiences' practices and consumers. More robust understanding and awareness from an early age will be promoted by integrating AMU and AMR knowledge into the school curriculum. Professionals can ensure rational understanding and awareness by making AMR a core component of professional education and developing health and veterinary sectors and agricultural practices. ^[22]

Table 1 GAP on AMR objective one framework^[22]

Member state action	Secretariat action	International and national partners' action
<ol style="list-style-type: none"> 1. Raise awareness of AMR via public communication programs. 2. Initiate antimicrobial resistance as a core component of professional education and veterinary sectors, and agricultural practice. 3. Include AMR and AMU in the school curriculum to promote better understanding and awareness. 4. Note AMR as an action-needed priority across all government ministries. 5. Promote and support the establishment of multisectoral (one-health) coalitions to address local or national antimicrobial resistance and regional and global participation in such alliances. 	<ol style="list-style-type: none"> 1. To develop and implement global communication programs and campaigns. Provide core communication materials and tools. 2. Collaborate with tripartite collaboration through core communication and education materials. Provide support to the Member States with integrated education on AMR and professional training. 3. Regularly publish on-progress reports of GAP implementation towards meeting impact targets to maintain the commitment to AMR reduction. 4. Prioritize antimicrobial resistance to be discussed with the Member States through the regional committees. 	<ol style="list-style-type: none"> 1. Antimicrobial resistance should be considered a core component of education and professional development in professional organizations and societies. 2. OIE support should be continued to its members to implement OIE standards, veterinary professional standards, and training. 3. Awareness-raising on AMR and promoting good animal production and hygiene practices 4. should be raised by collaborating with Intergovernmental organizations, FAO, OIE, and the World Bank. 5. Public awareness and understanding of AMU should be promoted and supported across all sectors by other stakeholders. 6. Member States should be encouraged and helped in forging in-country.

The United States of America has National Action Plan (NAP) For Combating AMR 2020-2025^[23] or CARB. This NAP presents strategic actions to be taken by the United States Government in the next five years to improve all Americans' health and well-being by changing the

course of AMR. According to the NAP for combating AMR during 2020-2025, the 1st goal is to slow down the emergence of AMR and prevent the spread of AMR infections by four objectives. The second objective is related to people's knowledge and awareness creation. For the development, expansion, and increase of education, training, and communication campaigns focusing on AMU responsibly, stopping the spread of AMR, and preventing infections and life-threatening conditions, this objective is therefore engaging the public and other stakeholders.

European strategic action plan on AMR^[24] Currently run by the European Centre for Disease Prevention and Control (ECDC), the European Antimicrobial Resistance Surveillance Network (EARS-Net), established in 1998, has been collecting information from all EU countries. A challenge to fighting and preventing bacterial infections is the lack of new drugs against bacterial infections. The WHO technical advisory group meeting of 16 experts from the European Region was held in August 2010. Seven strategic objectives for a regional strategic action plan on AMR were proposed. These objectives focus on a better understanding of the underlying causes of AMR and the development of laboratory capacity to monitor national trends in AMR, especially in life-threatening infections, and of which regarding emerging mechanisms of resistance that can further affect the treatment and prevention of bacterial infections in outpatient settings. Since the globalization of travel and trade facilitates the international spread of monitoring and surveillance systems, the systems should be linked to global reporting of antibiotic resistance and consumption. One of the seven strategic objectives is to improve awareness, patient safety, and partnership strategy.

The National Action Plan for Combating AMR in ASEAN Country, Philippines, Indonesia, and Lao PDR develops NAP on AMR based on GAP-AMR ^[25-27]. In the Philippines, the Inter-Agency Committee on Antimicrobial Resistance (ICAMR) was established in 2014. The plan was accomplished and achieved by following the Key Strategies (K.S.). The Philippines participated in the annual celebration of World Antimicrobial Awareness Week from 2015 to 2018 in response to the key strategies; Development of a Risk Communication Plan to Combat AMR. Information and education materials and infomercials have been developed and disseminated by ICAMR in these events. DA also celebrated WAAW at the central level and in some regions. Food Safety was the focus of the 2018 event. The responsible campaign was developed by DA with veterinarians, farmers, students, and the public. In 2018, countrywide roadshows were conducted by DA. The Philippine National Action Plan on Antimicrobial Resistance 2019-2023 was implemented in 2019 ^[27]. Focusing on Key Strategy 7; Improve awareness and understanding of antimicrobial resistance through effective communication and education, practical communication is integral to every public health initiative.

Indonesia National Action Plan on Antimicrobial Resistance 2017-2019^[26] aims to raise awareness and knowledge. The purpose of this objective is to establish an evidence-based public communications program for raising AMR awareness among the public and professionals and AMR knowledge and related topics in professionals via national-scaled professional education.

National Strategic Plan on Antimicrobial Resistance in Lao PDR 2019 - 2023^[25], the objective related to knowledge and awareness is objective 1 to improve awareness and knowledge of antimicrobial

resistance in people. This objective consists of 8 actions. This objective aims to increase awareness of AMR and appropriate use of antimicrobial drugs to more than 20%. To evaluate this objective, they will perform a pilot study assessing knowledge of AMR and awareness of the appropriate use of antimicrobials by using a pre-defined questionnaire with a target interview group. The preliminary results of the questionnaire will provide baseline data, and the questionnaire will be conducted every two years.

WHO-framed AMR global operational plan includes objective one stating that the plan will raise awareness and education on AMR to the public from Global Analysis. Report on Monitoring global progress on antimicrobial resistance: Tripartite AMR country Self-Assessment survey (TRACSS) 2019-2020, a specific follow-up report for the AMR national operational plan. This report analyzes TrACSS global results from November 2019 to July 2020. Questions in the survey require a ranking of national capacity and a five-point scale progress from A to E; no capacity, limited, developed, demonstrated, and sustained capacity. For most questions in the survey, the countries reported to be in C-E level (or developed, demonstrated, and sustained capacity, respectively) are considered using such indicators nationwide. Indicators for awareness of AMR and Infection Prevention and Control project (IPC)) are in the D-E range, which implies that the operation was carried out nationwide. During 2019-2020, 136 TrACSS (70.1%) of 194 WHO member states responded. GAP-AMR Objective 1 Raising awareness and education on AMR was reported by only 44.9% of the countries developing awareness nationwide and prioritizing stakeholders. The information implies that

additional investment in AMR awareness-raising campaigns using targeted messaging is required [28].

Strategic Plan for AMR Management in Thailand 2017 – 2021

In October 2014, the Ministry of Public Health (MOPH) held a consultative meeting of all sectors to analyze AMR management in Thailand. It was found that despite having a reasonable and systematic cost to deal with AMR issues, unity and obvious direction were still lacking as no specific national-level AMR policies. Then in 2015, the Coordination and Integration Committee on AMR was appointed. The committee was responsible for developing a National Strategic Plan on AMR as a co-framework for agencies and stakeholders to work on AMR solutions in Thailand.

On August 17, 2016, the cabinet passed a "National Strategic Plan on Antimicrobial Resistance 2017-2021" resolution. This plan is considered the first national strategy emphasizing AMR solutions with measurable outcomes, explicit purposes, AMR systematic management, and all-stakeholder participation under "One Health." The visions of the strategic plan are that sickness, death, and economic impact caused by drug resistance must be 50% decreased. It can be used to calculate the effects on health and the economy. Antimicrobial usage in humans and animals must be decreased at least 20% and 30% sequentially. Twenty percent increase in people who know about drug resistance and realize proper antimicrobial usage and international standard-based AMR management is obtained in Thailand. In order to achieve the objectives, the development of the National Strategic Plan on Antimicrobial Resistance in Thailand 2017 – 2021 is based on the three following guideline principles, including 1) a Strategy plan that emphasizes action,

and 2) a Strategy plan that emphasizes the integration and empowerment of various sectors. 3) Strategy plans that stimulate political will. Apart from the technical 6-aspect strategies consist of

Strategy 1 Surveillance of antimicrobial resistance under one-health approach

Strategy 2 Overall national antimicrobial drugs distribution control

Strategy 3 Prevention and control of infection in healthcare settings and supervise the irrational use of antimicrobial drugs

Strategy 4 Prevention and control antimicrobial drug use in agriculture and animal sectors

Strategy 5 Strengthen antimicrobial resistance knowledge and awareness on appropriate use of antimicrobial drugs to the people

Strategy 6 Managing and developing policy-level mechanisms to drive sustainable antimicrobial resistance work.

Strategies 1 -5 are used for integrally managing antimicrobial resistance, and strategy six is used for overall driving the Thailand National Strategic Plan on Antimicrobial Resistance 2017– 2021 to success goals. [2]

The summary of Thailand's National Strategic Plan on Antimicrobial Resistance 2017 - 2021 is as follows:

- 1) National AMR problems need to be solved. Therefore, this strategic plan will provide the central policy for AMR management in Thailand. In the past, AMR was just a subcomponent in different

policies bringing about short of the explicit direction of a national-level solution. Moreover, enabling the development of a national coordinating mechanism, the national strategic plan will address practical, consolidated, and sustainable AMR topics.

- 2) The negative impacts caused by AMR, widespread on the economy, trade, and tourism, need to be prevented. A convenient and quick international journey, ASEAN border opening, medical-hub orientation, and health tourism promotion are potential factors that increase AMR global and rapid transmission risks.
- 3) Collaboration with other nations to confront AMR is needed as it is considered a threat to global health security. In addition, the implementation of the 68th WHA assembly resolution on GAP on AMR will be supported as every country member is required to have NAP on AMR. Therefore, having National Strategic Plan on Antimicrobial Resistance 2017-2021 is the expression of the determination and responsibility of Thailand on AMR solutions for a global community.

In October 2014, a consultative meeting of all internal and external sectors was held by the Ministry of Public Health (MOPH) to analyze AMR management's situation and find out guidelines for integrating AMR activities in Thailand. However, previous operations have lacked integrity, as there have been many organizations with no consistency and coordination. In addition, some overlap and lack systematic collaboration management because no AMR national-level policy was explicitly developed.

In addition, the overall AMR management situation in the country is still not adequately understood or perceived by AMR-relating

stakeholders who only have perspectives confined to their area of responsibility or agencies. The Landscape of AMR Situations and Actions in Thailand was subsequently compiled and presented in a technical report to be used as an information source for relevant stakeholders to understand the overall AMR situation and AMR management system. The AMR relates stakeholders in Thailand, including the collaboration of roles of Thailand and other countries at regional and global levels for taking action on AMR, which is considered a significant threat to global health security. This action will efficiently develop coordination and collaboration among agencies and other sectors.

[29]

In May 2015, the integration of AMR works was carried out by the MOPH by appointing the Coordination and Integration Committee on AMR. Later on, components of the committee were improved for operational continuity. The committee was responsible for developing a National Strategic Plan on Antimicrobial Resistance 2017 - 2021 to be used as a co-framework for agencies and stakeholders to work on AMR solutions in Thailand. [2]

The underlying concept

The creation of the strategy is based on two concepts:

1. First, the One Health approach focuses on solving problems through multidisciplinary collaboration in health for a human, animals, and the environment, which will foster a unified collaboration and contribute to the excellent health of all life [30-32].

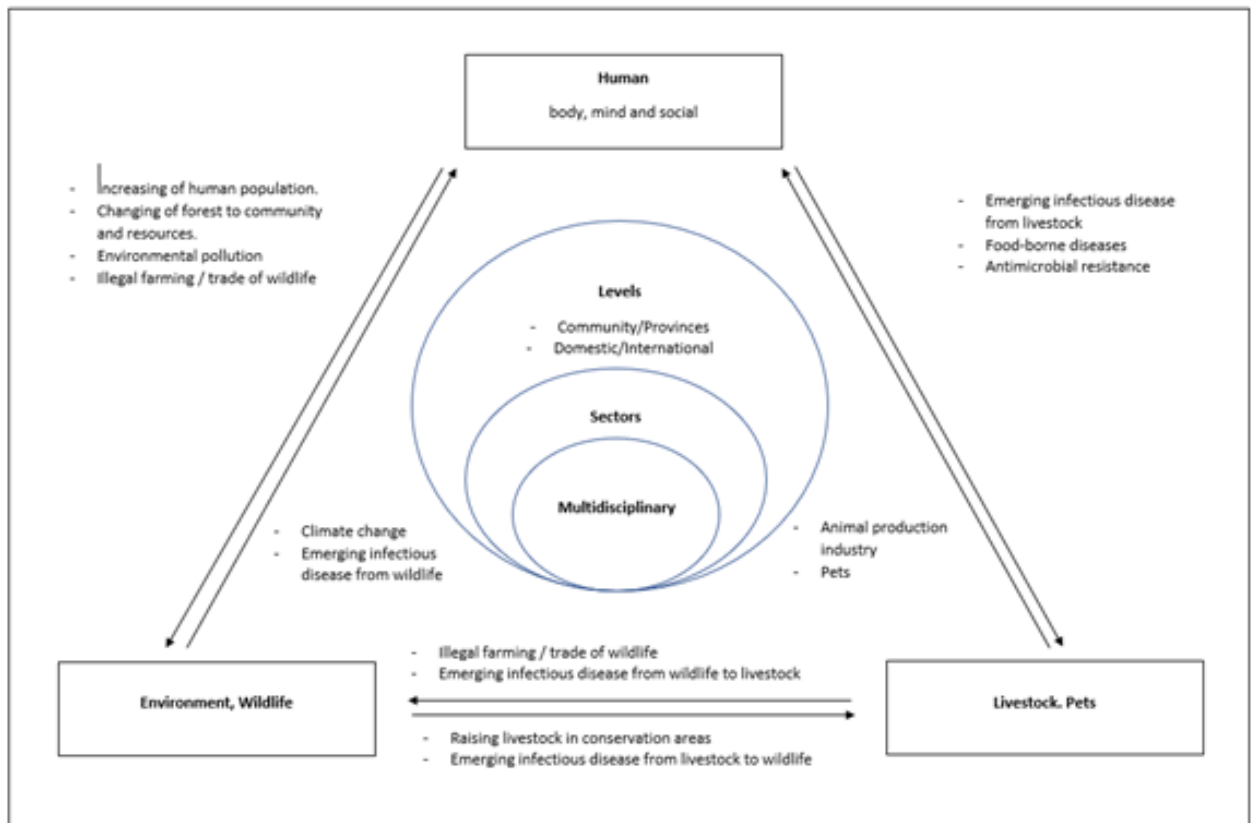


Figure 2 The One Health approach^[2]

2. The triangle that moves the mountain. Prawase Wasi (M.D. Professor) has presented a way to drive concrete reform of the health system that emphasizes whole society engagement and emphasizes that difficult and complex solutions must be implemented simultaneously. It is the creation of knowledge (knowledge generation), applying knowledge to the social movement. At the same time, link knowledge and social movements with a political commitment to a systematic move. Covenant, legal or structured society. In other words, there must be both state power, social power, and knowledge power^[33].

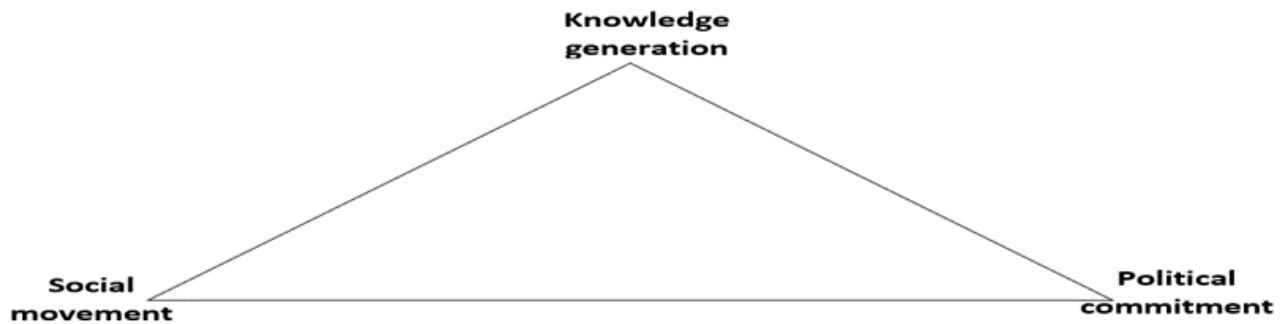


Figure 3 The triangle that moves the mountain^[2]

Integrated with other related policies

Thailand's National Strategic Plan on Antimicrobial Resistance focuses on integrating with other relevant policies, such as the National Drug System Development Strategy 2012-2016.

In addition, this strategic plan is the leading national policy for AMR management. Thus, it can be referred to in upcoming relating policies and plans to conform and integrate operational processes for AMR solutions even though different agencies or organizations carry them out.

Strategy 5: Strengthen antimicrobial resistance knowledge and awareness of appropriate use of antimicrobial drugs to the people.

The strategic goal in strategy 5 is that the people have knowledge of antimicrobial resistance and are aware of the appropriate use of antimicrobial drugs, including the spread and contamination of antimicrobial resistance in the environment, increasing by more than 20%. This strategy consists of 3 strategic actions.

- 1) Promote the role of organizations, civil society networks, and mass media in strengthening understanding of antimicrobial resistance and appropriate antimicrobial use.

- 2) Promote and develop health literacy and awareness of antimicrobial resistance and the appropriate use of antimicrobial drugs, especially for children, youth, and working-age groups.
- 3) Strengthen community and networking partnerships.

In addition, under strategy 5, there is an additional specific action plan, namely the Action Plan to promote antimicrobial resistance knowledge and awareness of AMU to the people 2019-2021. This action plan has set indicators, output, main activities, target groups, and departments responsible for the strategies set out in the strategic plan. In this regard, the action plan has been prepared through three subcommittee brainstorming sessions on June 13, 2019, June, 20-21 2019, and July , 10-12 2019. In October 2019, the Subcommittee created an action plan.

On July 13, 2020, the National Antimicrobial Resistance Policy Committee assigned a subcommittee to raise awareness on AMR and antimicrobial use. The Subcommittee consists of government sectors (Department of Health Service Support, Food and Drug Administration, National Statistical Office, Department of Health, Office of the Basic Education Commission, etc.), private sector (The Private Hospital Association, The Community Pharmacy Association, etc.), and social, civil society sectors (Thai Health Promotion Foundation, Drug System Monitoring and Development Center, etc.). The Subcommittee has the power and duty to define the work plan, coordinate, regulate, and monitor the operation, and set up a working group.

The operation of strategy 5, the past, has been implemented according to the strategic plan, significant progress.

- 1) There is a national coordination structure, which consists of the government sector (Department of Health Service Support), health promotion sector (Thai Health Promotion Foundation), and social sector (National Health Commission)
- 2) There is baseline data in 2017, and a trend in 2019 about Thai knowledge and awareness of antimicrobial resistance and AMU conducted through the Health Welfare Survey by the National Statistical Office In cooperation with the International Health Policy Program (iHPP).
- 3) Various communication activities are carried out through three channels: knowledge communication through village volunteers and ground war, knowledge communication through air war such as television, newspapers, and social media, and implementing social marketing in communicating with people on antimicrobial resistance and irrational antimicrobial use.

Output by 2021

Output 1: Health communication plan to promote AMR knowledge and awareness of AMU to people 2020-2021

Output 2: System of monitoring and assessing the knowledge and awareness of AMR of Thai people.

Output 3: Network of working of civil society, public sector, and academic sector in an integrated way

Output 4: World Antibiotic Awareness Week (WAAR) campaign

Significant projects

- 1) Project on preparing and driving a health communication plan to promote antimicrobial resistance knowledge and awareness of antimicrobial drugs to the people, 2020-2021. (Output 1)
- 2) Project on developing a system for monitoring and assessing awareness, knowledge, and health behavior on antimicrobial resistance and antimicrobial use. (Output 2)
- 3) Projects on building civil society networks, mass media, and communities raise awareness of the appropriate use of antimicrobial drugs. (Output 3)
- 4) World Antibiotic Awareness Week activity campaign (Output 4)

Overview of Strategy 5 Implementation

The goal for Strategy 5 of the NSP-AMR is a 20 percent increase in public awareness of AMR and appropriate antimicrobial use by 2021. The Subcommittee on public awareness of AMR and the appropriate use of antimicrobials is responsible for driving this strategy and tracking its progress. This Subcommittee is chaired by the Permanent Secretary of the MoPH and comprises representatives from the Health Service Support Department (HSSD), THPF, NHCO, and the FDA. The FDA served as the Secretary for coordinating and synergizing operations with all relevant parties. Therefore, to achieve the NSP-AMR's goal, action plans were implemented coherently, thereby decreasing redundant processes and reinforcing each other's work.

The establishment of a central mechanism to facilitate coordination and collaboration in driving this strategy. The agencies within this mechanism consist of the MoPH (via the HSSD), THPF, and NHCO. The MoPH is the strategic focal point for coordination with public agencies, while the THPF is the strategic focal point for health sector coordination, and the NHC is the strategic focal point for coordination with civil society. Thus, collaboration between all stakeholders can be achieved to help drive Strategy 5 forward. Furthermore, the NPC-AMR appointed the Subcommittee on public awareness of AMR and the appropriate use of antimicrobials to serve as the primary mechanism for establishing action plans, coordination, and the monitoring and evaluation of implementation among these sectors. The HSSD, as the Secretary of the Subcommittee on public awareness of AMR and appropriate use of antimicrobials, developed an action plan to promote public awareness of AMR and appropriate antimicrobial use 2019-2021 to systematically drive the work of all relevant agencies ^[8].

Public Policy Implementation

Public policy implementation is a key component of public policy analysis studies, a key link between policy formulation and policy evaluation. Public Policy Evaluation is defined as the comparison between the results and the results for the intended purpose. Relying on research methodology in public administration to determine whether the outcome of the policy was successful or failed and what factors are related ^[34]. Public policy implementation is converting policy objectives into tangible activities to accomplish their objectives ^[35]. However, public policy implementation can also fail.

Voradej Chandarasorn^[11] proposed an integrated theory of public policy implementation by studying the process of implementing public policy. Voradej said the following conditions or dimensions could measure the success and failure of public policy implementation.

Dimension 1 is to look at the results of public policy implementation, divided into three levels:

1. The output, a successful policy, must have achieved the required output of conditions.
2. Outcome, a successful policy must have desirable outcomes.
3. The ultimate outcome, successful policies must contribute to the development of the country.

Dimension 2 is the results according to dimension one that do not create problems for other policies.

Dimension 3 is the sum of all policy implementation must produce to desire the country's development.

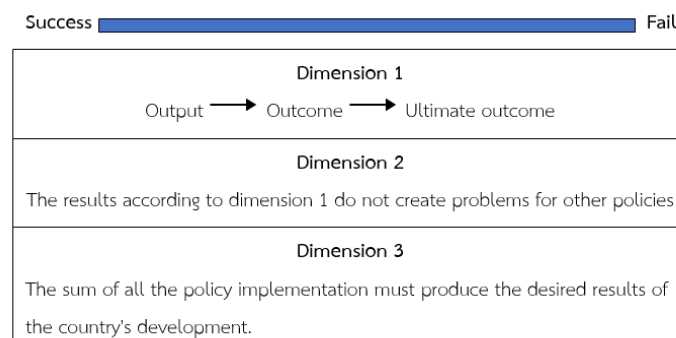


Figure 4 Results of the implementation of the policy^[11]

It can be seen that the implementation of policies cannot be achieved without the proper application of theories or theoretical models.

Chandarasorn^[11] synthesized knowledge by using Deductive Theory and Inductive Theory, summarizing the factors that were important to the process of policy application, and found that these factors differed according to the nature of the policy as the environment in which the policy is involved.

The process of implementing a policy consists of many factors. All these factors affect the process of implementing the policy in one way or another. If combining the elements of all factors, implementing a policy is an uncertain process since each factor affects one way or another on implementing the policy. These effects are not known in advance and can have many different outcomes. However, the outcomes are the success or failure of the policy implementation.

The success and failure of policy implementation can be measured by achieving policy goals and objectives. However, the impact on other factors is not only to measure the degree of achievement in output, outcome, and outcome but also to consider whether the outcome creates problems for other policies. Moreover, it will be considered that a summary of all policy implementation must produce to desire result of the country's development. Figure 5 shows the key factors in the policy implementation process; the synthesis of the study using deductive theory and inductive theory are similar.

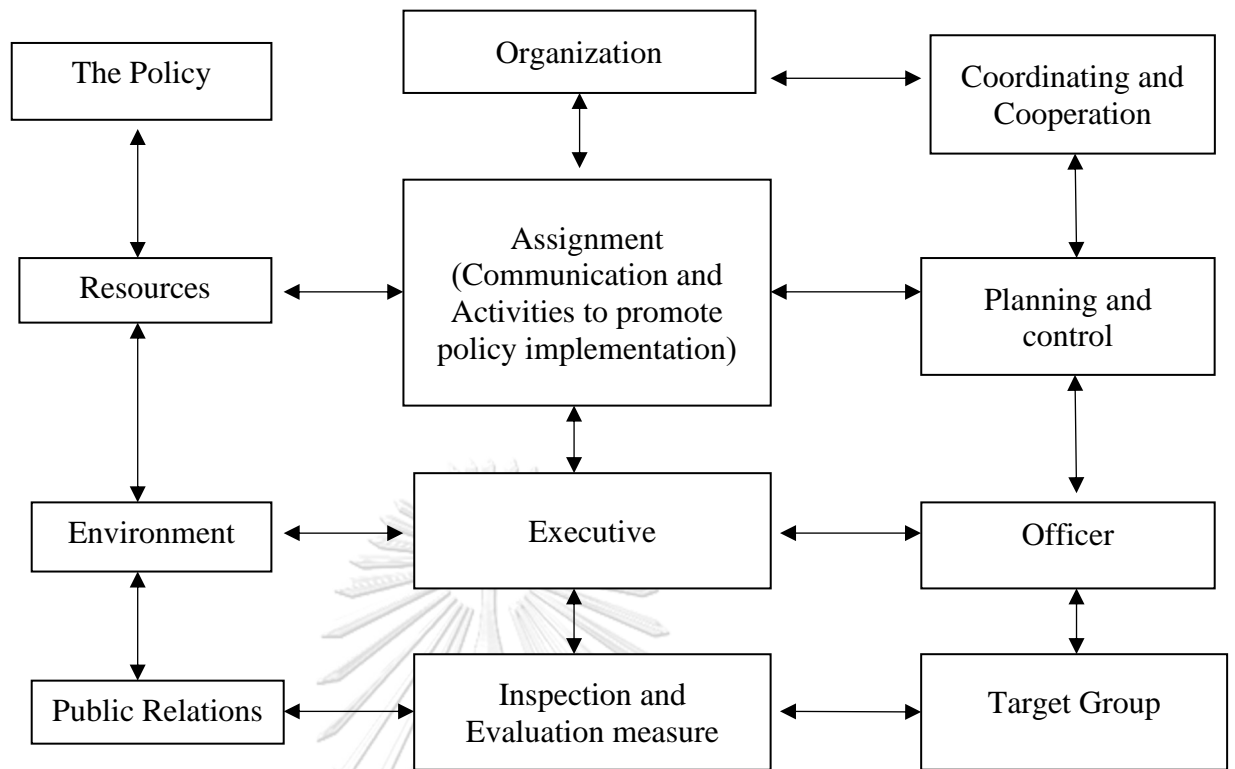


Figure 5 Summary of the factors obtained from the integration between deductive and inductive theory^[11].

Attewell and Gerstein investigated the failure of implementing a narcotics addict treatment policy in the United States in 1979. The cause of failure is the Federal Government's set crucial indicator in assessment program success guidelines was too strict in the local area. When the local community applied this practice, it was found to be a failure. The federal government had announced that if any hospital or private clinic cooperates in accepting narcotic addicts to therapy, it will fund that hospital and clinic. The state had set vital success factors of the policy implementation, including the number of participants or patients admitted to the hospital, and output was the number of patients who completed the state-pre-established treatment process. If any healthcare setting had sound project output, the project would be considered a success. This method caused errors and eventually failed to achieve the project because

this lacked consideration of the project's outcome, which was that the patient was completely cured and able to return to society to use daily [36].

Another study found that educators stated a lack of willingness to actively engage in simulation with the participants and time pressure. From the studies, we can see the failure of the implementation is caused by many factors^[37]. An implementing a policy, there must be a relevant factor that will make it successful. From the studies, we will see the success factors, including the policy^[12, 38-43], organization^[38, 39, 41, 42], resource^[38, 41, 44, 45], leader^[38, 43, 44], environment^[12, 40, 41], officer^[12, 39, 40, 42, 45], coordination and cooperation^[12, 39, 43, 45], etc.

There are few studies on the implementation of NAP-AMR. Pakistan has a national AMR action plan to combat health emergencies, including AMR. Mishal S Khan et al. studied to find barriers to implementing national antimicrobial resistance action plans in Pakistan using mixed methods. They used the snowball technique to find the key informants from the human sector and animal sectors. Interventions to address the irrational use of antibiotics are encouraged, prohibited, and constraining. The result from thematic analysis found that prohibiting untrained drug sellers and untrained doctors are more satisfactory to influential policy stakeholders than the implementation of solid regulations targeting groups perceived to be powerful. A strict regulatory approach (prescription-only in antibiotics, banning antibiotics for growth promoters in livestock) was considered a 'technical' solution^[46].

In England, the public health sector developed and led a new UK-wide pledge campaign in 2014. This campaign aimed to improve the behaviors around the appropriate use and prescription of antibiotics. Alex

B. and et al. evaluated the first season, and the data were collected from August 2014 to January 2015. The result shows that 12,509 visitors (26.5 %) pledged to become Antibiotics Guardians. The conclusion, the work was required to improve engagement with target audiences and determine whether this campaign impacted antibiotic consumption and prescribing behavior among the public and healthcare professionals ^[47].

Studying the factors contributing to the success of the NAP-AMR implementation is interesting. HITAP's evaluation found that the implementation of Strategy 5 was to evaluate only the public sector outcomes, but no study on pharmacists conducting the implementation process and activities of National antimicrobial strategy and the factors contributing to the outcomes.

Knowledge, awareness, and behavior of people on AMR and appropriate use of antimicrobial drugs

Knowledge was defined as facts, stories, rules, and restrictions that arise from the learning process and individual experiences applied in daily life^[48].

Awareness is the ability to make better than chance-level, forced-choice decisions concerning the identity or the presence of the primes. Conversely, it was assumed that observers were unaware of the primes when these decisions were at a chance level of performance ^[49].

The behavior defined as every manifestation of humans, both consciously and unconsciously, both internal and external, both observed and not directly observed, must require measuring instruments because both happen voluntarily and involuntarily. In addition, every symptom may vary according to the person, time, time, and place^[50].

In this study, knowledge, awareness, and behaviors are related to AMR and AMU. The related research reviews include knowledge, awareness, attitude, and behavior toward AMR. The National Health and Welfare Survey in Thailand in 2019 found sources of antimicrobial drugs that Thai people can access from health care settings, drug stores, and grocery shops^[10]. According to other countries that people use for treating colds, fever, and sore throat, the top 3 symptoms of antimicrobial drug use the most were common cold, fever, and sore throat^[51-55].

In Thailand knowledge score on AMR and AMU was low to moderate^[10, 56-59]. The countryside of Thailand was lack of knowledge of AMR and AMU. Thai people call antimicrobial drugs like anti-inflammatory drugs or "Ya-Kae-kseb"^[10, 58] because inflammation in their perspective was pain, swelling, redness, and heat, just like in medical terms, they cannot explain the cause of infection-related inflammation^[60]. Most of the respondent's answer was "antibiotics can kill viruses" and "Antibiotics are effective against colds and flu." that was the wrong answer. The other countries that studied public knowledge had the same results as Thailand. In France, the public's knowledge about the use of antimicrobial drugs found that most people know that "overuse can lead to AMR"^[61]. Most respondents answer, "antibiotics kill viruses" in Namibia^[62]. In Saudi Arabia, public knowledge was poor^[63] and moderated in Omani^[64]. Simone Mohrs conducted the qualitative study to find factors that influence antibiotic resistance and knowledge about antibiotics resistance in Jakarta by using semi-structured interviews following a short interview guide and using content analysis to analyze the data. After analysis, the researcher identified five majors categorized that can explain AMR's use of antibiotics and knowledge. Five major

factors that influenced the use of antibiotics and knowledge of AMR were education factor, media, policy approach, culture, and trust ^[13].

Awareness on AMR and AMU, the National Health and Welfare Survey in Thailand in 2019, found that Thai citizens' awareness means a score of the adult population aware of the importance of appropriate antibiotic use, and AMR was 3.3 out of 5 scores ^[10]. According to awareness about the appropriate use of antibiotics in all three diseases (sore throat, diarrhea, and fresh wound) among first-year students of Mahidol University. There was little evidence that high awareness could lead to appropriate antibiotic use ^[65]. Mirko Ancillotti found that a lack of awareness of what is done to counteract AMR seems to work as a powerful barrier to individual action^[66].

An online survey of the causes of AMR from 1,855 people by the Drug System Monitoring and Development Center (DMD) in 2018 found that people stop taking antimicrobial drugs when their symptoms improve. They do not take the antimicrobial drug according to the prescription. Instead, people buy antimicrobial drugs themselves and take them as they had previously given by their healthcare professional, and buy and take antimicrobial drugs (the understanding that it is an anti-inflammatory drug) ^[67]. Another research in Thailand found that most Thai people had low to moderate antimicrobial drug use behavior scores ^[56, 58, 59, 68, 69]. Raising awareness and knowledge of AMR and AMU requires selecting appropriate approaches for multiple target groups and may involve combining methods to enable people to engage in appropriate antimicrobial use behaviors ^[57].

This second chapter contains the literature review, theoretical and conceptual framework presenting the literature review of related theories, research in the different contexts, and content of policy implementation and National Action Plan for Combating Antimicrobial Resistance.



CHAPTER III

METHODS

This chapter provided detail of the research method. The study was divided into two phases, as shown in Figure 6. Phase I used a descriptive survey study to answer the implementation process and activities of the National antimicrobial strategy on the appropriate use of antimicrobials. Phase II used an in-depth interview with key informants to find the factors contributing to the implementation process and activities of the National antimicrobial strategy on the appropriate use of antimicrobials.

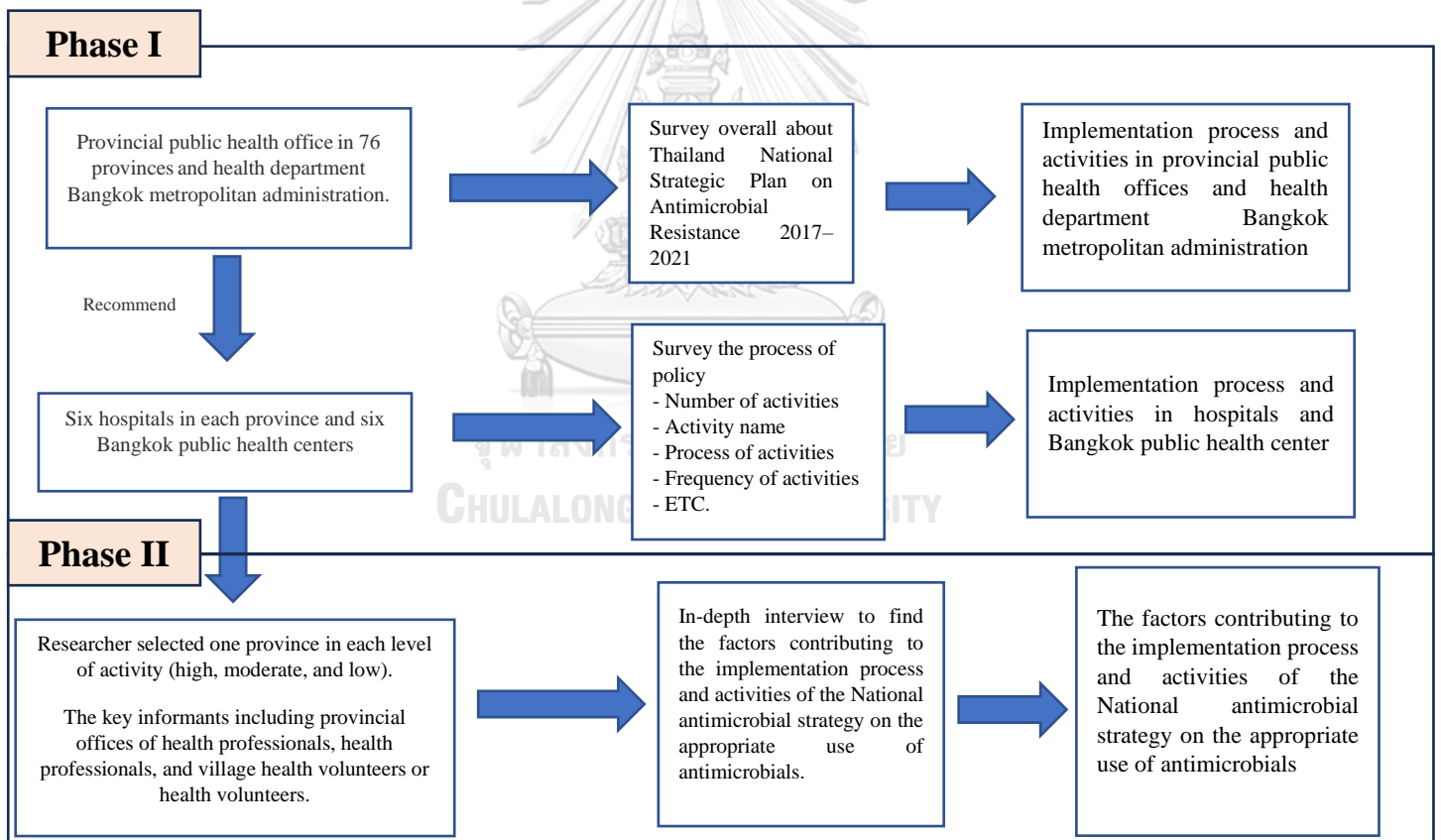


Figure 6 Research methodology

Phase I: Investigation of the implementation process and activities of the National Strategic Plan on AMR Strategy 5

Study design

This phase used a descriptive survey study to investigate the implementation process and activities of the National antimicrobial strategy from January to March 2022.

Population and sample

The population was 77 provinces. The respondents were the health professionals (for example, pharmacists, nurses, and public health professional officers) responsible for Strategy 5 implementation. The researcher surveyed the provincial public health office in 76 provinces and the health department of Bangkok metropolitan administration, totaling 77 provinces using survey form 1. The basic information about AMR-related activities in the provinces was collected from provincial health officers or health department Bangkok metropolitan administration officers.

According to the purposive sampling method, the AMR-related activities and priority contents were collected from health professionals' officers in hospitals and Bangkok public health center (survey form 2) (identified by provincial health officers or health department Bangkok metropolitan administration officers. The inclusion criteria were health professionals responsible for Strategy 5 for equal or more than three years, and the exclusion criteria were those who were not willing to answer surveys.

Study instrument.

The survey instruments were semi-structure questionnaire with two types of questionnaires. Survey Form 1 was for the provincial health office in 76 provinces and the health department of Bangkok metropolitan administration. The responders were the health professionals responsible for Strategy 5 implementation. For example:

- Do you know Thailand's National Strategic Plan on Antimicrobial Resistance 2017– 2021?
- Is there any Strategy 5 to Strengthen antimicrobial resistance knowledge and awareness on the appropriate use of antimicrobial drugs to the people activities in your province?
- If there are activities that are performed, what activities do you have?
- What is the media used in the campaign of your province?
- Please recommend three hospital pharmacists in your province who are implementing Strategy 5 Strengthen antimicrobial resistance knowledge and awareness on the appropriate use of antimicrobial drugs to the people activities on their responsible area, and their contact information.

Survey Form 2 for hospitals or Bangkok public health centers recommended by the provincial public health office in 76 provinces and the health department of Bangkok metropolitan administration. The responders were the health professionals responsible for Strategy 5 implementation. Some question included:

- During 2017-2021, are there any activities to educate people about AMR or AMU in your hospital? (For example, training, campaign, distributing knowledge materials, etc.)."
- What activities have you organized to raise knowledge and awareness of AMR and AMU? Please specify.
- Where is the campaign area?
- Who is the target group in each activity?
- What is the number of participants in each activity (approximately)?
- What is the frequency of activities each year?
- What are the media and campaign materials?

The questionnaire was validated on the content validity that covers research objectives and the appropriateness of language. Three qualified persons assessed the content validity and developed the IOC (Index Consistency). If IOC was more than 0.5, the questionnaire was valid according to the content and can be used in research. The IOC of both questionnaires was 0.98. Subsequently, the questionnaire was tryout with 30 people to test the reliability of the tools. Cronbach's alpha coefficient is used to find reliability. Cronbach's alpha coefficient of both questionnaires was 0.952.

Data collection

- 1) The researcher contacts The Research Ethics Review Committee for Research Involving Humans.
- 2) The survey was answered online via google doc. The researcher sent the first questionnaire via post mail to the provincial public health offices in all 76 provinces and the health department of

Bangkok metropolitan administration. The document submitted included the information statement, research ethics certificate, a link, and Q.R. code.

- 3) The provincial public health offices in all 76 provinces and the health department of Bangkok metropolitan administration responded to the first set of questionnaires and returned them to the researcher.
- 4) The researcher sent survey form 2 for the hospital under the Ministry of Public Health or public health center in Bangkok to the hospitals and Bangkok public health center that the provincial public health office and health department Bangkok metropolitan administration recommends. The response is online via google doc. The document submitted included the inform statement, research ethics certificate, and a link and Q.R. code.
- 5) The health professionals answered survey form 2 for the hospital under the Ministry of Public Health or public health center in Bangkok back to the researcher. If the respondents had not sent the answers, the researcher was reminded by post-mail.
- 6) The research was conducted from January to March 2022.

Data analysis

Descriptive analysis was used in this research. The analysis showed how the policy implementation process and activities correlate with the measurement outcome dimensions of the National antimicrobial strategy on the appropriate use of antimicrobials. Based on the survey data, the data obtained from the analysis were categorized into three

groups for use in phase II: provinces with high, moderate, and low activities. The provinces with equal or over 80 % of the areas' activities were high level. The provinces with activities covering 50-79 % are moderate levels. The provinces with lower than 50 % of the activities cover the areas or do not know.

Phase II: Investigation of factors contributing to the implementation process and activities of the National Strategic Plan on AMR Strategy 5

Study design

This phase was qualitative research using in-depth interviews to find the factors contributing to the implementation process and activities of the National antimicrobial strategy in key informants. This phase was conducted between April to August 2022.

Key informants

This study used purposive sampling to select key informants. The criteria for purposive were activities in each province at a high level, moderate level, and low level by selecting provinces in each level responsible for public knowledge and public awareness on antimicrobial resistance for equal or over three years, had the activity in every month or every three months, and the target groups including direct (patient, elderly people, students) and indirect (health professionals) target group.

The researcher selected provinces at each level. The key informants were the respondents from Phase I. The key informants were the province public health offices, hospitals, and village health volunteers or health volunteers. Hospitals recommended the village health volunteers. The researcher contacted the key informant by post-mail to

them for permission to interview. Then the researcher contacted key informants directly by e-mail. The interview was conducted until data was saturated and no new information was added.

Content of guideline

The tools used to collect data were a semi-structured interview guide and an online interview with key informants. The semi-structured interview guide consists of 3 parts. The first part was personal key informant information. The second part was the implementation process and activities of the National antimicrobial strategy. The last part was about factors contributing to the implementation process and activities of the National antimicrobial strategy on the appropriate use of antimicrobials.

Data collection

The researcher contacts The Research Ethics Review Committee for Research Involving Human Center. The researcher contacted the key informant by post-mail to them for permission to interview. The researcher contacts the key informants to schedule an interview. The interview was either conducted in Thai. The information sheet, consent form, and interview guide were Thai. The information sheet, consent form, and interview guide were sent post-mail and e-mailed to the key informants. The key informants were asked if they fully understood, agreed, checked the consent form, understood the information sheet, and agreed to the interview recording. The interview used the Zoom meeting program for an online interview. The interview used 40-60 minutes. Depending on key informants, the consent form was sent back to the researcher by post-mail or electronic forms. When interviewing, the researcher introduced himself by giving his name, surname, and place of

work, suggesting the research project informing about the research ethics protecting the rights of informants keeping data safe secret. The researcher made a strong relationship for key informants to feel comfortable. The researcher continued in-depth interviews by using semi-structured interviews and records during the interview until the data was saturated. The researcher requested a report on the activities of each informant activities for use in data analysis. After interviewing all the informants, the obtained data were analyzed for the qualitative research method. The record was permanently deleted after the finish.

Data trustworthiness

This research used the data triangulation technique to confirm by considering the information from key informants, including the provincial public health officers, health professionals in hospitals, and village health volunteers or health volunteers. The researcher checked if the key informants changed and whether the information would be identical.

Table 2 Data triangulation check

Contributing factor	The provincial office of public health officers	Health professionals	Village health volunteers
Policy	✓	✓	✓
Coordination	✓	✓	✓
Resources	✓	✓	✓
Environment	✓	✓	✓
Public relations	✓	-	✓
Executive	✓	✓	✓
Personel	✓	✓	✓
Target group	-	✓	✓
Other factors	✓	✓	✓

Data analysis

The researcher transcribed the interviews. The researcher took the information compiled according to the thematic approach, which Braun and Clarke (70) outline six steps to perform the analysis. The software ATLAS.ti version 22.2.0 (L-33E-E32) was used to analyze the data. The researcher reviewed and familiarized with the information. The researcher defined codes and organized them into data sets. The researcher combined the dataset code to establish the main points. They have included the main points to make a chart. The researcher defined and names issues. Then, the researcher wrote the report. The researcher used the results of an in-depth interview with a group of key informants to describe the content to find a suitable approach.

The analysis results obtained in phases I and II can describe the study's outcome in the 2019 National Health and Welfare Survey in Thailand regarding activities, processes, related factors, etc. The result will be describe in Chapter IV.

CHAPTER IV

RESULTS

The results of this study were presented in this chapter based on the two phases, i.e. the investigation of the implementation process and activities of the National Strategic Plan on AMR Strategy 5 and their contributing factors. The findings will help answer the research objectives.

Phase I: Investigation of the implementation process and activities of the National Strategic Plan on AMR Strategy 5

In the beginning, a total of 77 respondents completed the questionnaire with a response rate of 100% (77/77). This included 76 provincial public health offices (PPHO) from 76 provinces and one capital setting i.e. the Health Department of Bangkok Metropolitan Administration (BMA) (Table 3). According to the recommendation of the first-round respondents, 275 settings that had experiences in conducting activities to raise knowledge and awareness about the appropriate use of antimicrobials were further surveyed. However, only 207 respondents returned the questionnaire; the response rate was 75.3%. There were 15 regional, 33 general, 122 community, and 30 sub-district health-promoting hospitals suggested by PPHO and seven of Bangkok's public health centers by the BMA Department of Health (Table 3). Therefore, in total 284 respondents from respective settings completed the survey. Of these, most were pharmacists (88.7%), followed by nurses (5.3%) and public health technical officers (5.3%), as shown in Table 4. On average, they had experiences in dealing with AMR knowledge and AMU awareness for about 6.11 years (SD = 5.3), or mostly with

experiences more than or equal to three years (87.0%), as demonstrated in Table 5.

Table 3 Respondents' affiliation type

Affiliation type	Number of respondents (%)
Provincial public health office	76 (26.8)
Health Department of Bangkok Metropolitan Administration	1 (0.4)
Regional hospital	15 (5.3)
General hospital	33 (11.5)
Community hospital	122 (43.0)
Sub-district health-promoting hospital	30 (10.5)
Bangkok public health center	7 (2.5)
Total	284 (100)

Table 4 Respondents' occupation.

Occupation	Number of respondents (%)
Pharmacist	252 (88.7)
Nurse	15 (5.3)
Public health technical officer	15 (5.3)
Doctor	1 (0.4)
Thai traditional doctor	1 (0.4)
Total	284 (100)

Table 5 Respondents' experience in promoting AMR knowledge and raising awareness of the rational use of antimicrobials.

Experience	Number of respondents (%)
Experience (years); mean \pm SD	6.1 \pm 5.3
\geq 3 years	247 (87.0)
< 3 years	37 (13.0)
Total	284 (100)

All 284 individual settings were unique, with different capacities and functions, so they could be divided into four groups for ease of presentation and discussion. They embraced Group 1 (provincial public health offices and Health Department of Bangkok Metropolitan Administration), Group 2 (regional and general hospitals), Group 3 (community hospitals), and Group 4 (sub-district health promoting hospitals and Bangkok's public health centers). Regarding the policy implementation process in Table 6, most respondents of the four groups knew about Thailand's National Strategic Plan on Antimicrobial Resistance 2017-2021 (93.31%). They had been assigned by the central authority (Ministry of Public Health) to implement Strategy 5 (84.5%). When asked about experiences in organizing activities to raise the people's AMR knowledge and AMU awareness, up to 247 respondents (87.7%) reported that they had ever done so, especially in Groups 3 and 4 (i.e. 94.3% and 97.3%, respectively) that dealt with people at the community levels.

With respect to activity types (n=249), respondents in four groups stated that AMR knowledge training (66.3%) was mostly organized, followed by exhibition (34.5%) and mobile health units (16.5%). It should be noted that Groups 1 and 4 (i.e. 41.8% and 33.3%, respectively) also specified other arranged activities, such as roadshows and hygiene education (Table 7).

Table 6 Respondents' involvement in Thailand's National Strategic Plan on Antimicrobial Resistance 2017-2021 (n=284)

Issue	Number of respondents ^a (%)				
	Group 1 (n=77)	Group 2 (n=48)	Group 3 (n=122)	Group 4 (n=37)	Total (n=284)
1. Has known about Thailand's National Strategic Plan on Antimicrobial Resistance 2017-2021 (NSP-AMR).					
Yes	74 (96.1)	46 (95.8)	113 (92.6)	32 (86.5)	265 (93.3)
No	3 (3.9)	2 (4.2)	9 (7.4)	5 (13.5)	19 (6.7)
2. Has been assigned by the upper authorities to implement Strategy 5 for promoting knowledge on AMR and raise awareness of the rational use of antimicrobials.					
Yes	69 (89.6)	40 (83.3)	100 (82.0)	31 (83.8)	240 (84.5)
No	8 (10.4)	8 (16.7)	22 (18.0)	6 (16.2)	44 (15.5)
3. Has ever organized activities or measures to promote knowledge on AMR and raise awareness of the rational use of antimicrobials.					
Yes	55 (71.4)	43 (89.6)	115 (94.3)	36 (97.3)	249 (87.7)
No	22 (28.6)	5 (10.4)	7 (5.7)	1 (2.7)	35 (12.3)

^a Group 1 = Provincial public health office and Health Department of Bangkok Metropolitan Administration

Group 2 = Regional and general hospitals

Group 3 = Community hospital

Group 4 = Sub-district health-promoting hospital and Bangkok public health center

Table 7 Activity types used to disseminate knowledge about AMR and the appropriate use of antimicrobials (n=249)

Activity type	Number of respondents ^a (%)				
	Group 1 (n=55)	Group 2 (n=43)	Group 3 (n=115)	Group 4 (n=36)	Total (n=249)
AMR knowledge training	32 (58.2)	23 (53.5)	85 (73.9)	25 (69.4)	165 (66.3)
Exhibition	15 (27.3)	20 (46.5)	42 (36.5)	9 (25.0)	86 (34.5)
Mobile health unit	6 (10.9)	6 (14.0)	25 (21.7)	4 (11.1)	41 (16.5)
Community radio	4 (7.3)	6 (14.0)	9 (7.8)	4 (11.1)	23 (9.2)
Others, e.g. roadshow, hygiene education, meeting, etc.	23 (41.8)	11 (25.6)	22 (19.1)	12 (33.3)	68 (27.3)

^a Group 1 = Provincial public health office and Health Department of Bangkok Metropolitan Administration

Group 2 = Regional and general hospitals

Group 3 = Community hospital

Group 4 = Sub-district health-promoting hospital and Bangkok public health center

As for media or channels used to disseminate AMR knowledge and AMU awareness (Table 8), the Top 3 of them were printed publications, Internet, and audiovisual aids. The printed publications in the form of educational posters were mainly used by Groups 1 (58.4%) and 3 (79.1%), but educational brochures by Groups 2 (79.1%) and 4 (69.4%). For the Internet applications, all groups preferred social media to video clips (37.0% vs. 31.7%). The respondents in Group 1 utilized publication announcements (18.2%) more than community radios (14.3%) as audiovisual aids, but Groups 2-4 were quite the opposite. In addition, other media, e.g. games, case studies, or music, were also used.

Table 9 shows the settings and target groups of the arranged activities. Almost all respondents specified hospitals or their workplaces as the priority settings for their activities, except for Group 1, stating the people's homes. However, the home and community came second and third places for the activities. For the main target groups, the respondents focused on patients (72.7%), health professionals (72.3%), and village health volunteers (69.9%). When analyzing the target groups in detail, Groups 1 and 3 emphasized health professionals and patients. The main targets for Group 2 were patients and healthcare professionals, but those for Group 4 were patients and village health volunteers. However, the older people, the working-age population, and community leaders were also groups of concern.

In regard to the frequency of the activity arrangement (Table 10), all respondents in four groups said they organized once a year (58.2%), every 6 months (19.7%), or every 3 months (8.4%). When asked to rate the importance of activity content related to AMR knowledge (6 items) and AMU awareness (6 items) on a scale of 5, i.e. 0 = not important and

5 = most important, most respondents provided overall mean scores 4.4 – 4.8. Based on the AMR knowledge, the item “Taking antibiotics often has side-effects such as diarrhea” was rated with an overall mean score of 3.9, whereas "Unnecessary or inappropriate use of antibiotics can result in ineffective treatment or resistance" was rated the highest score (score = 4.8). The highest score implied that the respondents put more emphasis on particular knowledge. For AMU awareness, all items were rated above 4.0, and the item "If people take antibiotics inappropriately, it induces antimicrobial resistance" was rated the highest score (score = 4.8). Likewise, this implied that the item was more focused on AMU awareness (Table 11).

Table 8 Media types used to disseminate knowledge about AMR and the appropriate use of antimicrobials (n=249)

Media type	Media	Number of respondents ^a (%)				
		Group 1 (n=55)	Group 2 (n=43)	Group 3 (n=115)	Group 4 (n=36)	Total (n=249)
Printed publication	Educational poster	45 (58.4)	32 (74.4)	91 (79.1)	24 (66.7)	192 (77.1)
	Educational brochure	36 (46.8)	34 (79.1)	83 (72.2)	25 (69.4)	178 (71.5)
	Academic article	13 (16.9)	10 (23.3)	22 (19.1)	4 (11.1)	49 (19.7)
Internet	Social media	28 (36.4)	17 (39.5)	38 (33.0)	9 (25.0)	92 (37.0)
	Video clip	22 (28.6)	16 (37.2)	36 (31.3)	5 (13.9)	79 (31.7)
Audiovisual aids	Public announcement	14 (18.2)	7 (16.3)	10 (8.7)	1 (2.8)	32 (12.9)
	Community radio	11 (14.3)	11 (25.6)	24 (20.9)	8 (22.2)	54 (21.7)
Others	Game, case study, music, etc.	33 (42.9)	20 (46.5)	46 (40.0)	12 (33.3)	111 (44.6)

^a Group 1 = Provincial public health office and Health Department of Bangkok Metropolitan Administration

Group 2 = Regional and general hospitals

Group 3 = Community hospital

Group 4 = Sub-district health-promoting hospital and Bangkok public health center

Table 9 Settings and target groups of the activities (n=249)

Setting	Target group	Number of respondents ^a (%)				
		Group 1 (n=55)	Group 2 (n=43)	Group 3 (n=115)	Group 4 (n=36)	Total (n=249)
Hospital	Healthcare professional	44 (80.0)	33 (76.7)	89 (77.4)	14 (38.9)	180 (72.3)
	Patient	28 (50.9)	35 (81.4)	87 (75.7)	31 (86.1)	181 (72.7)
Home	Adolescence	17 (30.9)	9 (20.9)	23 (20.0)	10 (27.8)	59 (23.7)
	Working-age population	26 (47.3)	15 (34.9)	47 (40.9)	19 (52.8)	107 (43.0)
	Older people	34 (61.8)	16 (37.2)	64 (55.7)	22 (61.1)	136 (54.6)
Community	Village health volunteer or health volunteer	36 (65.5)	23 (53.5)	84 (73.0)	31 (86.1)	174 (69.9)
	Community leader	24 (43.6)	11 (25.6)	47 (40.9)	12 (33.3)	94 (37.8)
School	Student	24 (43.6)	13 (30.2)	32 (27.8)	9 (25.0)	78 (31.3)
Temple	Monk or priest	12 (21.8)	4 (9.3)	18 (15.7)	7 (19.4)	41 (16.5)
Others	Soldier, police, etc.	6 (10.9)	4 (9.3)	8 (7.0)	0 (0)	18 (2.9)

^a Group 1 = Provincial public health office and Health Department of Bangkok Metropolitan Administration

Group 2 = Regional and general hospitals

Group 3 = Community hospital

Group 4 = Sub-district health-promoting hospital and Bangkok public health center

Table 10 Frequency of the activity arrangement (n=249)

Frequency	Number of respondents ^a (%)				
	Group 1 (n=55)	Group 2 (n=43)	Group 3 (n=115)	Group 4 (n=36)	Total (n=249)
Once a year	29 (52.7)	31 (72.1)	68 (59.1)	17 (47.2)	145 (58.2)
Every 6 months	11 (20.0)	7 (16.3)	27 (23.5)	4 (11.1)	49 (19.7)
Every 3 months	7 (12.7)	0 (0.0)	8 (7.0)	6 (16.7)	21 (8.4)
Every month	3 (5.5)	2 (4.7)	5 (4.4)	7 (19.4)	17 (6.8)
Others	5 (9.1)	3 (7.0)	7 (6.1)	2 (5.6)	17 (6.8)

^a Group 1 = Provincial public health office and Health Department of Bangkok Metropolitan Administration

Group 2 = Regional and general hospitals

Group 3 = Community hospital

Group 4 = Sub-district health-promoting hospital and Bangkok public health center

Table 11 Importance of activity content related to AMR knowledge or AMU awareness rated by the respondents in four groups (n=249)

AMR or AMU content	Importance score of activity ^a rated by respondents ^b				
	Group 1	Group 2	Group 3	Group 4	Overall
AMR knowledge					
Unnecessary or inappropriate use of antibiotics can result in ineffective treatment or resistance	4.8 ± 0.5	4.8 ± 0.5	4.8 ± 0.5	4.9 ± 0.6	4.8 ± 0.1
When you get a full course of antibiotics (from doctor's or health professional's recommendation)	4.7 ± 0.6	4.6 ± 1.0	4.6 ± 0.6	4.8 ± 0.7	4.7 ± 0.1
Taking antibiotics often has side-effects such as diarrhea	3.4 ± 1.3	4.1 ± 1.0	3.9 ± 1.0	4.3 ± 1.2	3.9 ± 0.4
Antibiotics are not equal to anti-inflammatory drugs	4.7 ± 0.5	4.7 ± 0.9	4.7 ± 0.7	4.4 ± 1.5	4.6 ± 0.2
Antibiotics are not effective against colds and flu	4.6 ± 0.9	4.8 ± 0.5	4.6 ± 0.6	4.6 ± 1.2	4.6 ± 0.1
Antibiotics cannot kill viruses	4.6 ± 0.8	4.7 ± 0.9	4.8 ± 0.6	4.7 ± 1.0	4.7 ± 0.1
AMU awareness					
People should use antibiotics only when they are prescribed by a doctor or health professional	4.6 ± 0.8	4.5 ± 0.9	4.6 ± 0.6	4.9 ± 0.4	4.7 ± 0.2
People should not keep antibiotics and use them later for other illnesses	4.2 ± 1.1	4.3 ± 1.1	4.5 ± 0.8	4.8 ± 0.6	4.4 ± 0.3
If people take antibiotics inappropriately, it induces antimicrobial resistance	4.8 ± 0.6	4.8 ± 0.5	4.8 ± 0.4	4.9 ± 0.4	4.8 ± 0.1
Antibiotic resistance is one of the problems that should be considered	4.8 ± 0.5	4.7 ± 0.7	4.7 ± 0.5	4.9 ± 0.2	4.8 ± 0.1
The impact that antibiotic resistance will have on people's health, and that of their families	4.5 ± 0.8	4.4 ± 1.0	4.6 ± 0.7	4.9 ± 0.4	4.6 ± 0.2
People are not at risk of getting an antibiotic-resistant infection as long as they take their antibiotics correctly	4.6 ± 0.7	4.1 ± 1.4	4.4 ± 1.0	4.8 ± 0.9	4.5 ± 0.2

^a Scores ranging from 0 = not important to 5 = most important

^b Group 1 = Provincial public health office and Health Department of Bangkok Metropolitan Administration

Group 2 = Regional and general hospitals

Group 3 = Community hospital

Group 4 = Sub-district health-promoting hospital and Bangkok public health center

Phase II: Investigation of factors contributing to the implementation process and activities of the National Strategic Plan on AMR Strategy 5

The in-depth interview was conducted with 23 key informants with saturated data received. The informants consisted of 6 males and 17 females (Table 12). They were mostly aged 40-50 with work experience of 10-20 years, and their occupations were hospital pharmacists (n=8), health provincial office pharmacists (8), or village health volunteers (7). By that time, they lived in the Northeast (14), South (6), North (2), or Central Region (1).

Table 12 Characteristics of 23 key informants

Code	Gender	Age (years)	Occupation	Experience (years)	Region
HP01	Female	50	Hospital pharmacist	21	Northeast
HP02	Male	29	Hospital pharmacist	5	Northeast
HP03	Female	50	Hospital pharmacist	4	South
HP04	Male	51	Hospital pharmacist	20	Central
HP05	Female	41	Hospital pharmacist	7	North
HP06	Male	32	Hospital pharmacist	9	Northeast
HP07	Female	43	Hospital pharmacist	14	South
HP08	Female	46	Hospital pharmacist	19	Northeast
PHP01	Female	45	Health provincial office pharmacist	3	Northeast
PHP02	Female	48	Health provincial office pharmacist	13	Northeast
PHP03	Male	30	Health provincial office pharmacist	5	Northeast
PHP04	Female	43	Health provincial office pharmacist	10	South
PHP05	Female	45	Health provincial office pharmacist	8	North
PHP06	Female	33	Health provincial office pharmacist	5	Northeast
PHP07	Female	37	Health provincial office pharmacist	10	South
PHP08	Female	29	Health provincial office pharmacist	3	Northeast
VHV01	Male	63	Village health volunteer	20	Northeast
VHV02	Male	59	Village health volunteer	20	Northeast
VHV03	Female	60	Village health volunteer	21	South
VHV04	Female	43	Village health volunteer	7	Northeast
VHV05	Female	47	Village health volunteer	10	South
VHV06	Female	35	Village health volunteer	8	Northeast
VHV07	Male	40	Village health volunteer	8	Northeast

As the thematic analysis was performed based on the Integrated Theory of Public Policy Implementation proposed by Chandarasorn^[11], eight factors contributing to the policy implementation of the National antimicrobial strategy were initially obtained. However, two more specific factors were further extracted from the interview. In total, 10 factors with main themes (Table 13) that affected the implementation of Strategy 5 were analyzed and elaborated below.

Table 13 Ten factors with main themes

Factor	Main theme
1. Policy	Policy importance Clear policy objectives Policy congruence with organizational missions
2. Resources	Allocated budget Printed and video media Media production by the central authority (Ministry of Public Health)
3. Environment	Economic and social aspects Political issues Newly emerging diseases
4. Coordination	Internal coordination External coordination
5. Public relation	Channel of knowledge dissemination
6. Target group	Cooperation of target groups Village health volunteers
7. Executive	Motivation built by executives Executive support
8. Personnel	Number of manpower Staff competency and teamworking
9. Civil society network	Network empowerment and strengthening Support for network roles
10. Work mechanism	Continuity of work to implement the policy

Policy. Three major themes of the policy, i.e. its importance, clear objectives and congruence with organizational missions, were extracted. Most key informants said Strategy 5 was important and necessary, as the policy could solve the problems of antimicrobial resistance. Additionally, the policy objectives were clear enough to deal with the AMR problems and raise the public's knowledge and awareness about AMR and AMU. Given the policy clarity, the framework provided did not limit the policy implementation in any area. Regarding the correspondence between the policy and organizational missions, most asserted that a pharmacist's role was already in promoting the health literacy of the public, and a hospital's vision and mission were to work with community networks to strengthen the community through network participation. Moreover, the process of raising knowledge and awareness about AMR and AMU was also a vital part of rational drug use (RDU), which was set out by the Ministry of Public Health and implemented by provincial public health offices and hospitals across the country. Some examples of informants' responses are as follows:

“When Strategy 5 arrives, we have tried to adjust our work according to our context. From what I read, I feel like it's clear and can see the direction that the strategy wants to go.” (HP02)

“If we follow Strategy 5 as specified, I think it will certainly help [manage the AMR resistance]. And if the people are more aware [of AMR], it should have a wider impact.” (PHP08)

“Raising awareness [about rational antimicrobial use] is one of our roles. No matter what pharmaceutical issue, it is the pharmacist's duty to sort it out.” (HP02)

“The hospital's goal is in line with the Ministry's policy regarding RDU which we focus on reducing the use of antibiotics. A part of what we have done is about personnel prescribing based on particular guidelines. The second part is concerned with the people to order to increase their knowledge and understanding.” (HP06)

“I would say it's [Strategy 5] one of the missions of the Provincial Health Office that we have to do along with the scope of pharmaceutical care in hospitals; something like this...” (PHP07)

Resources. For this factor, three themes emerged, i.e. allocated budget, media and audiovisual aids, and media production by the central authority. Most of the key informants, especially the health provincial officers and village health volunteers, complained of the inadequate budget allocated to their organizations to produce educational media and organize activities. More budgets were needed to increase the number of target groups or hold more extensive activities. The policy mandate from the central authority did not come with a budget. Thus, the activities of improving the people's AMR knowledge and AMU awareness were not fully performed and required some budgets from other projects budget to integrate into it. Over the past three years, most budgets were used to manage Covid-19 and cut down for the relevant activities. Due to the insufficient budget, holding activities to cover all local areas with intended activities was not feasible. Nevertheless, few hospital pharmacists reckoned that the allocated budget was enough because all activities did not require a great deal of money. For example, a village trip to campaign AMR knowledge only needed a budget for food and refreshments, transportation, etc. Furthermore, it could share some

budgets with other projects, such as RDU, from the Ministry of Public Health or other funding bodies, e.g. subdistrict administrative organizations (SAOs) budgeting through the subdistrict health promoting hospitals, District Health Board (DHB) and the National Health Security Office (NHSO). The following are some answers from key informants:

“The budget for media production, I think, is still lacking and educational documents, sometimes I receive 10 copies, like this, it's not enough, it's just giving away, it's like we have to choose to give away something like this, the educational documents are lacking.” (HP04)

“[Budget] Not enough. Because, to put it simply, the policies that have been ordered do not come along with a budget.....Education like just once a year and going through a one-day meeting is, well, that's not enough.” (HP08)

“Let's say if given a budget, it's not enough, right?” (PHP04)

“The hospital budget which they allocated once a year. Now, if you ask it, 's enough? It's not enough to cover every activity the area will carry out.” (VHV06)

Regarding printed and video media, most key informants used printed media, such as educational brochures and posters, to distribute to target groups. The media had internal content with a short message for the target group to continue communicating. The Food and Drug Administration and the Drug System Monitoring and Development Center supported the source of the printed media. In addition, some of the key informants also used video media for dissemination to target groups. Most of the video media was mainly from the DMD video media.

Regarding the adequacy of the media, most key informants reported that the media and materials used in organizing events to raise knowledge and awareness about AMR and the rational use of antimicrobials were enough. Because the media used might be used sparingly or not need to be distributed to the target groups. Nevertheless, most focused on educating the target groups. In addition, they knew the source of support for media and materials, such as the Drug System Monitoring and Development Center. For example, they explained something below.

“[Media] Enough, we made it easy to understand. In addition, there is a budget to support our agency. Still, the media we have created may not be pretty and may not be international.” (HP05)

“The media provides knowledge as if we would give each one...we would separately have each hospital write their activities and then request to withdraw their own budget. We may have to follow up on whether each hospital is doing enough in each area. That is, we will do it.” (PHP05)

Enough. If it's not enough, I can always ask for the DMD. I know the source.” (PHP07)

When asked about the choices of a central authority distributing the budget to the area or producing educational materials about AMR and appropriate antimicrobial use, most key informants preferred the latter choice. This was because the central authority could produce the standard media that reached every age group across the country. In addition, local agencies could distribute it in their responsible areas without worrying about the budget for producing media or wasting time on content design

and media design to suit the local context. For example, they explained something below.

“The big media boom that AMR is harmful, what kind of drugs can cause it, and why is it resistance.....” (HP01)

“I want to support the media that shows the big picture.....not to spread to the local area but to create a role model to create mass communication to make it clear, and we are ready to support.” (HP03)

“If we have one agency or organization that is responsible and can work here continuously, communicate clearly. I think it works because these things are mass.” (PHP02)

“If it is a central media everywhere, it will be a blog as well. When it occurs, the person who produces or does it must have expertise or expertise in doing that.” (VHV04)

Environment. Three major themes extracted were economic and social aspects, political issues and newly emerged diseases. Economic and social aspects factors directly affected organizing activities to raise knowledge and awareness about AMR and AMU. Since organizing activities were often the people's working time, the public's participation only had certain target groups, such as older people and students. In addition, social issues that caused people to lack awareness about AMU were that people still had to work to make a living. Therefore, when ill, people must find drugs or health products that can be made them recover usually and return to work quickly because if people do not have income, they cannot raise themselves, including health care. For example, they explained something below.

“They will look at having to earn a living, they (target groups) won't come to the event, sometimes they stop at all, even the VHVs themselves, sometimes meetings are less because it has an impact, for example, traveling, they have to pay money to travel. The second thing is that sometimes staying in activities all day makes him lose his income because they join us.” (HP04)

“They don't care if it's right or wrong. They don't care if their kidneys are damaged or not, don't care if they are infected with AMR, don't know what AMR is, it is intangible, but they care that tomorrow there will be money to give their children to go to school, they must be fine, must be healthy to recover, they must not hurt...because it is earning a living.” (HP05)

“There is an impact, namely the problem of earning a living, expensive goods, and insufficient money in the community.”
(VHV02)

Whether it was national politics or local politics, in terms of political factors, key informants said that most local politicians and authorities cooperated and supported exceptionally well, such as spreading the news about AMR to local people to know about the problem or persuading people to participate in activities with civil society networks. However, when the management of the local government organization changed, the local political policy would change, causing some areas to lack continuity. The person responsible for the activity should regularly work with the local government organization because it is the key factor that drives work efficiently. For example, they explained something below.

“It's like changing the mayor, the SAO, or something like this. In that case, the support will be different in our activities. It's a problem, just like what you do at the municipality. When you change the mayor, it's another form.” (HP08)

“Local in some districts. The sub-district health promotion hospital gives money to organize the activities, right? But as I said, they will intervene in the activities.....it depends on which sub-districts are strong in getting local budgets help, or in some areas, some municipalities will inspect and go out to educate the grocery store together with us, which is at the strength of each district and sub-district.” (PHP07)

“Full support for training services or budgets that we will request from the NHSO. This municipality fully supports and participates in activities with us, which means walking in the same direction as public health and the community.” (VHV05)

Newly emerging diseases were one of the factors that the key informants said directly impacted the implementation of Strategy 5. In the past, the coronavirus outbreak had disrupted activities, according to Strategy 5. It was impossible to bring people together because of the policy of not gathering people for activities, so training activities were not held knowledge or raised public awareness. Moreover, the central government had reduced the budget for organizing activities on AMR. Another critical issue is that people find antibiotics to take by themselves to treat COVID-19 infection without realizing the problem of drug resistance because antibiotics cannot kill COVID-19. For example, they explained something below.

“During COVID, people choose to buy medicines according to other people. That is, some people buy Amoxi to eat, while they see that they believe it because the first point is that they do not want to go to the hospital. The second is to get rid of the disease by following a loud voice that claims to be heard to believe what is claimed.” (HP03)

“Covid affects a lot because, like in the early days, the first wave, something like this. When there is a case, people start to panic, so we didn't go to work here (AMR), it's disappeared.” (HP07)

“Oops! The spread of COVID has made it more difficult to go to the area and do activities. The public will focus on COVID-19 rather than other issues like this.” (PHP06)

“Covid has a direct impact because of disease prevention and control measures. They won't allow groups to gather. It is affecting how we will organize training activities.” (VHV06)

Coordination. Internal and external coordination were two crucial themes. Internal coordination was when the officers responsible for activities, according to Strategy 5, must coordinate with officers within the organization, such as within the department, a division, or an organization. The key informant mentioned that was a strength because those in charge of the activities were close to the personnel within their departments, so they could create an understanding of Strategy 5, making work continuous and effective. However, there was still a problem that personnel were rotated, which requires constant communication and coordination to keep activities consistent. External coordination means those officers responsible for activities according to Strategy 5 must

coordinate with other organizations, such as provincial public health offices, hospitals, and sub-district health promotion hospitals. Key informants cited the issue of external coordination as a strength. Because the activity operators are intimate with personnel outside the organization, continuous collaboration was a supplement to make the activity successful by communicating through the main channels as LINE officials. For example, they explained something below.

“[Internal coordination] No problem, because my boss's role, he's the same generation as me, and he already knows the policy. The officers in the department and the doctors themselves happen to be family doctors, meaning they will already know the policy. Therefore, it is seen that working is fine. They can ask for cooperation. There is no problem.” (HP03)

“It's not difficult because [Internal coordination] our executives open to it. The department head can talk and exchange here with the executives.” (PHP03)

“Going to them [External organization] once, maybe just once or not, will have to go many times. The word "Go" means that we can communicate via LINE in any way, use any channel continuously if any activities are coming in, the next year must be continued.” (HP01)

“Because the network is quite strong and easy to coordinate. We can contact them directly to do something like this.” (HP06)

“Oh, if talking about this coordination [External], I have met with primary care pharmacists a lot, and there will also be a pharmacist who will coordinate with the head of a pharmacist. There will

always be meetings, so there's never been a problem. Keep in touch and talk through the line group all the time.” (PHP07)

“We are close to the people in the community....it has a softness to coordinate, not too far apart. It is like talking to each other often...it is an intimacy that relies on each other to help each other right this.” (VHV06)

Public relation. The channel of knowledge dissemination was the theme of focus. Key informants mentioned that most used LINE group communications to publicize activities related to raising knowledge and awareness about AMR and rational antimicrobial use. Since the LINE group had health professionals and their networks, it was easy to communicate. When the networks received information from the line group, they could use it to promote activities to the people in the area. In addition, key informants also mentioned other channels for publicizing activities, such as community radio. Public relations were through voice calls in the market, temples, or villages. More importantly, community leaders were encouraged to publicize with the people in the area because community leaders could easily reach target groups. In terms of public relations through documents, there were letters from hospitals or the provincial public health office to various sub-district health promotion hospitals. There would be activities to invite target groups to join. For example, they explained something below.

“We will use LINE to send information to the sub-district health promotion hospital, and then they will publicize it in the area....” (HP05)

“Public relations via voice along the line of the market.” (HP06)

“At the moment, it's like publicizing through LINE mainly.”
(HP08)

“I can always give knowledge through the LINE of the VHVs group.” (PHP07)

Target group. Key informants addressed the cooperation of target groups and village health volunteers as two main themes for this factor. The target groups that key informants had access to cooperate with the activities according to Strategy 5 very well and pay attention. Materials, equipment, and areas were prepared before key informants entered the activities area. In addition, the target groups cooperated well because the event organizer tried to make the target group see that it was not a burden to the target group, the activity took little time, and the target group did not waste much time working. The study also found that most of the target groups reached were village health volunteers (VHVs) because this target group was considered a public sector that reaches people in the area. Since the practitioners could not get to know or advise the public directly, VHVs were considered an important target group to create knowledge and awareness about AMR and the rational use of antimicrobials. This result was consistent with a Phase 1 study in which hospital group respondents indicated that their primary target group was health professionals and village health volunteers.

“We try to make them feel we are not a burden, so we won't talk too long, right? We will not make them waste time closing the grocery store to speak with us, but if they meet our village, ask for less than half an hour to insert these stories. We'll try to make them

feel like they've gone in and don't feel like they're a burden to listen to until they're bored. We take important points.” (HP03)

“We see the enthusiasm, both Oryor Noi being a civil society, such as the Health Assembly, like this, they are enthusiasm.” (PHP06)

“They are very cooperative if it's about training in rational drug use.” (VHV02)

Executive. Motivation built by executives and executive support were two themes emerging from the interview. Most of the key informants reported that executives gave their freedom to organize activities and were motivated by recognizing and praising workers and motivating workers to perform according to the indicators of the Ministry of Public Health, which the issue of drug resistance is one of the indicators of the Ministry of Public Health. There is also a work point payment system, such as special remuneration. Most key informants reported that the executive encouraged those in charge of activities to fully implement them by providing consultative and partial budget support.

“First of all, he gave me the freedom to do anything. The second one is to glorify something like this.” (HP01)

“Work point payment system.....If there is a count of the first unit that exceeds the point there, you get all the money. This is an incentive, a project with the Ministry of Public Health.” (HP05)

“The executive saw the importance, and the executive also went to the area and went to the mobile health unit every time like this. It will also be an empowerment in the team.” (PHP08)

“The role is very important for me to work here because one is my boss. He is like someone who always supports me because we work outside the network. Of course, there are many problems, and how do we find a solution? What should we do?” (HP08)

“[Executive] A lot of support since the ministry set it as an indicator since then. Even though it's downgraded now, our work group still prioritizes it, so you still see it consistently.” (PHP04)

“High-level executives at all levels.... there will support the project according to our policy plan mainly to spread it into practice and bring it to the level of the proactive mechanism.” (PHP05)

Personnel. Two main themes, i.e. the number of manpower and staff competency plus teamworking, were extracted. Key informants mentioned that the number of personnel carrying out activities according to Strategy 5 needed to be increased. Part of the reason was that personnel need to pay more attention to such issues, including having other tasks that personnel in the agency are responsible for making their mission to raise public knowledge and awareness about AMR and the rationale of AMU. Regarding the competency of the key informants, the sector officers who were health personnel were sufficient because they had been working continually, and officers were sent to be trained to enhance their knowledge and skills. In terms of working as a team, most of them were fine. There was intense work and good relations between departments.

“It's not enough to answer that it's not enough. Because it's really about the staff, the stimulation of the problem of AMR should be encouraged every day.....I want it to be a routine.....honestly, I

would like to have a working group who took care of this matter.”
(HP04)

“The problem is that this [Strategy 5] is our job. Other people, work groups, or even others in the department may not pay much attention to this point.” (HP06)

“If I take myself as a location, it may not be enough. It's not just one dimension to do with the agency if it really has to be done.”
(PHP02)

“We seem to be missing people who will continue to work in the community..... With staffing and workload, it seems like we can't go away like this (grins broadly). This is a little obstacle.” (PHP08)

“Working as a team, I think we can talk to each other, we can communicate with the team, the team is quite cooperative.” (HP05)

“Here, the teamwork is good. A strong point will be that one has strong teamwork.” (PHP05)

Civil society network. For this factor, there were two major themes, i.e. network empowerment and strengthening and support for network roles. Empowering and strengthening the network was one of the strategies of strategy 5. Key informants on the network strengthening process must let the network see the importance of the problem of AMR to educating. When the network saw the problem, recognized it, and had the knowledge, it made the network learn together and created more cooperation in solving problems. In addition, the encouragement and use of trust between health professionals and people in the community were considered key factors in building the strength of the network that made

the network more willing to work. The key informant discussed the network role promotion process in strategy 5. The process was to encourage the community to be a model community, such as model communities using rational drugs, drug-free grocery stores, and increasing the potential of consumer networks. Such a process organizes activities to educate various networks, especially youth, and allows leaders to care for patients. There was a process of enhancing the participation of community leaders, local administrative organizations, and consumer foundations in each area to participate in activities to raise awareness about AMR and rationale antimicrobial use.

“The most common way is to let them share the problem with us. It is based on our information, such as academic information [AMR and AMU].” (HP07)

“We tried to make the model village in the grocery store story without dangerous drugs and all these things. By inserting RDU, it was the only village we took pretty seriously.” (HP02)

“In fact, if it belongs to the sub-district administrative organization (SAO), the local administrative organization, or something like this, there is a time when we invite items to invite activities in each district.....we will ask them to do activities together.” (PHP06)

“Volunteer megaphone, they will know that the word volunteer megaphone is a volunteer that operates in matters of community consumer protection, including dangerous drugs in the community, dangerous drugs in the grocery store, dangerous drugs in animals, and everything that as a consumer protection work in the

community, we will use the word "Volunteer Megaphone."
(VHV06)

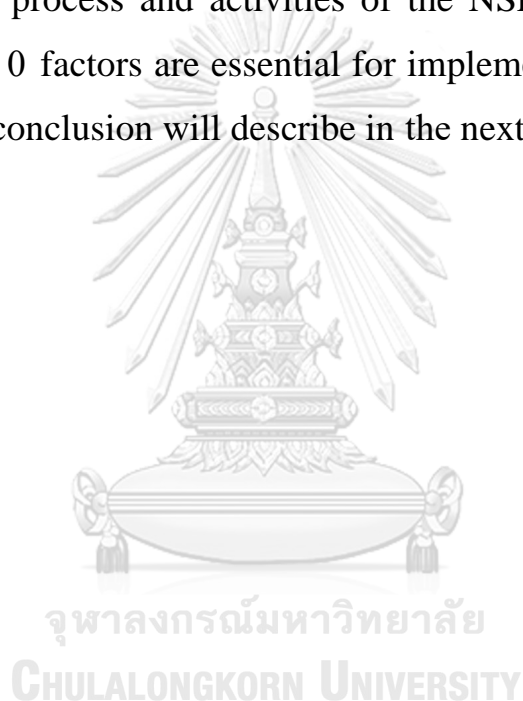
Work mechanism. The continuity of work to implement the policy was the only theme for this factor. Work mechanism was another factor that was mentioned by most of the key informants. Strategy 5 must have continuity of operations and make personnel interested in and understand the strategy so that activities can be carried out intentionally to solve the problem of AMR. Personnel rotation is considered a vital work process problem because it causes the person to learn new jobs, causing the work to be discontinued. More importantly, there should be monitored and followed up on the implementation of Strategy 5 and how the results are achieved. The government must aid local authorities in promoting knowledge and awareness about AMR among the people.

"It's about work and the work of all personnel involved in making this happen. The workflow structure is that there is no problem. The concentration of tracking the change of the people like this, I think it, is something that must be followed and is a challenge."
(HP02)

"There must be a leading agency responsible for this matter, not let go....If you say it belongs to the Ministry of Public Health, you have to point out who it is, and they have to do this continuously and seriously." (PHP02)

"If the government can do it, AMR is a silent threat because we can't see or know. We can't see the people who die from AMR. If they can do it, it'd be great. I leave it to you if we can do it all over the country, it would be perfect." (VHV03)

The investigation of the implementation process and activities of the NSP on AMR Strategy found that most respondents knew about NSP on AMR and had been assigned by the central authority to implement Strategy 5 . Concerning activity types, respondents stated that AMR knowledge training was mostly organized, and printed publications were mainly used. The respondents focused on patients, health professionals, and village health volunteers. The factors contributing to the implementation process and activities of the NSP on AMR Strategy 5 found that the 10 factors are essential for implementing Strategy 5 . The discussion and conclusion will describe in the next chapter.



CHAPTER V

DISCUSSION AND CONCLUSION

This chapter discusses the results of objective 1 investigates the policy implementation process and activities (Phase I), and objective 2 investigates factors influencing the policy process (Phase II). Therefore, in this chapter, the results of both studies will be discussed simultaneously. Moreover, it summarizes the study's findings with recommendations for stakeholders and further studies.

Discussion

The survey on the policy implementation process and activities mostly reflected pharmacists' views in the surveyed organizations. The survey results showed that although most agencies, both the provincial public health offices and hospitals, knew the strategic plan and were assigned by the central agency to carry out activities according to Strategy 5, some never organized activities according to Strategy 5. When considering the survey results, the provincial public health offices were the center of the provincial health service system, mainly responsible for regulating, evaluating, and supporting the performance of public health agencies in the provincial area, so in some areas, Strategy 5 was not implemented locally. While the number of hospitals that were not assigned to carry out activities according to Strategy 5 was more significant than the Provincial Public Health Offices but used to carry out activities according to Strategy 5. The main reason was that the hospitals were an agency close to the people and were directly responsible for

raising knowledge and awareness, resulting in more experience in driving Strategy 5 than the provincial public health offices.

Practitioners view that the policy could solve the problem of AMR because the strategic action on building networks and strengthening networks of health workers applied for policy implementation will help prevent the emergence of AMR. Including knowledge, creation was necessary to make the target group remember the correct knowledge with them for the rest of their lives. The strategy was clear in that its objectives were to tackle AMR, it was flexible, and it could be applied in the area, making policy objectives encompass public knowledge and awareness solutions. This study is consistent with the study of Pansupa that if a policy's goals and objectives were precise, feasible, and consistent, the policy objectives would likely be achieved^[12]. Jimba study concluded that policy flexibility results in more policy implementation by practitioners^[70]. This research was consistent with Ali's finding that health policy implementation performance in primary health care was associated with a higher clarity of goals and objectives^[71]. Therefore, the goals and objectives of the policy were clear and easy to implement, which will implement Strategy 5 more successfully.

Coordination, both internal and external the organization was an important factor that would make the implementation of Strategy 5 highly successful. Because if the operators had a good relationship within and outside the department, activities would be carried out smoothly and continuously, including if personnel inside and outside the organization had a correct and consistent understanding, the policy would be successful. Ann F. Chou explored organizational structural and process factors that facilitate the implementation of National Foundation for

Infectious Diseases/Centers for Disease Control and Prevention strategies in U.S. hospitals and found that coordination was all associated with implementing strategies for optimizing antimicrobials^[72].

The results showed that the central authority did not assign some authority to implement Strategy 5. Although there was a good relationship between coordination between organizations, the coordination for the transfer of Strategic plans was still a problem that policy had not been implemented in the area. Most provincial public health offices knew Strategy 5, but more needs to be conveyed for implementation. In addition, the coordination between the provincial public health office and hospitals in the assignment of strategic plans may need to cover the area more and give importance. The study results reflected the problem of policy transfer from the central to the area that still needs to be covered, causing the implementation in the area. In addition, the survey results showed observations about the coordination between agencies in organizing activities. It could be observed that community hospitals and sub-district health-promoting hospitals organized more activities than provincial public health offices and large hospitals (regional hospitals and general hospitals). The survey results indicate that coordination for policy implementation needed to be more effective or that Strategic 5 activities could be integrated with RDU activities in healthcare facilities to align activities in the same direction.

The results of the survey could be seen that knowledge training in each agency had the most. The second activity was an exhibition organized by various agencies to educate people about antibiotic resistance and the appropriate use of antibiotics through a Pharmacy Week exhibition or World Antimicrobial Awareness Week (WAAW).

Although such a process can make it easy to reach the target group, this process was difficult to cover all areas. Due to budget problems, officers, or other aspects, activities that could affect a wide range of target groups, such as community radio, were in small numbers. Therefore, promoting activities that could expand a wide range of target groups under limited factors was important. The study of Parveen et al. conducted a systematic review to determine the impact of a public health intervention on raising awareness of AMR and behavioral change associated with antibiotic use. The results revealed that 17 studies used educational intervention, theater intervention, gamification, digital intervention, animated film, fear-based messages, or musicals. However, providing a wide range of education to engage the public and young learners was key to raising awareness of this important health issue^[73]. The study of Ahmed et al. showed that AMR knowledge improved and it was retained over 12 weeks^[74]. Therefore, central agencies should encourage using other forms of activity, especially those that are easily accessible such as community radio and social media that are widely accessible, for example, Facebook, Twitter, and Instagram.

As for the frequency of organizing activities, it was found that most of the activities were held once a year because each area held an activity during Pharmacy Week or WAAW. For some places that had activities more than once a year, most of the activities were based on indicators of the Ministry of Public Health on developing a system for appropriate antibiotic use in hospitals. The study showed that the frequency of activities was still very far away, with only one activity per year. Some areas organized activities joined with other project campaigns, such as WAAW, Pharmacy Week, or project activities related

to RDU, which were insufficient to raise public knowledge and awareness. Agencies should increase the frequency of organizing more activities to achieve the outcome of Strategy 5. The results of the survey revealed that respondents held activities with less frequency. The Activities were classified as specific activities for certain target groups. Most of the media used in the campaign were not diverse, using centralized media that were print media. These reflected that the budget received from the central authority was limited. If the additional budget were sufficient, it would help to design a variety of activities that were suitable for the local context. Including making activities cover all target groups affecting the outcome of Strategy 5. Receiving an additional budget could also be used to produce media to raise knowledge and awareness that was sufficient and comprehensive in all target groups, especially in the production of mass communication and online media that would make it easier for target groups to reach. Having more budgets would enable those in charge of activities to organize activities continuously and more frequently each year, resulting in greater awareness and sustainability for the public.

Most of the media used in the campaign involved posters and brochures. The media could reach a small target group, unable to lead to the majority of the target group. The study found that most media used for activities came from the center. Media and equipment were sufficient in organizing activities according to Strategy 5. Key informants knew where to get media support and materials, making it easier to drive events. Various sources supported print media, such as the Ministry of Public Health, the Food and Drug Administration, and the Drug System Monitoring and Development Center. As for the availability of materials

and equipment, if they were suitable and sufficient for use, they could solve problems in an emergency^[38]. Notably, there should be a management plan, care, and appropriate maintenance of materials and equipment for sustainability^[40]. However, print media and online media still need to be increased. Currently, more than 52.25 million people in Thailand use online media^[75], but the survey found that only 36.95% of respondents use online media to spread knowledge about AMR and AMU. Therefore, support in online media production would help reach more target groups. Spending the budget on educational media production was essential because it would help relieve the burden of those in charge of the project in the area who must procure educational media for training themselves. Therefore, the central government should accelerate the development of educational media on AMR and the appropriate use of antimicrobials for people of all age groups.

The findings were consistent with a study of Bruyndonckx, *et al.* in Belgium, where campaigns to raise awareness of antibiotic resistance and antibiotic use were being conducted through mass distribution media, including radio stations, television spots, and posters or informational folders. Nevertheless, the study found that most Belgians remember the campaign from TV spots, newspapers, or radio, where the public is aware of AMR and antibiotic use^[76]. As to whether the study of McNulty, *et al.* on antibiotic use awareness campaigns changed public attitudes and knowledge about the use of antibiotics or not, the survey found that Britons and Scottish people remembered only a slight amount of the content of antibiotics posters^[77]. In addition, a study of Mayadah B. Shehadeh *et al.* emphasized that the impact of targeted learning materials could be practical and feasible in improving patient awareness and

knowledge^[78]. In addition, social media such as Twitter was engaged with the public conversation to good effect for raising awareness on AMR^[79].

The target group factor was one of the factors affecting the success of the implementation of the policy of Chantrasorn^[11]. Most survey respondents focused on creating knowledge and awareness among health professionals, patients, and VHV, which included direct (patient) and indirect (health professionals, VHV) target groups, while most studies looking at the major contributors for reducing AMR were students^[80]. The results of this study were consistent with the study of Worawit, who studied antibiotic use behavior among village health volunteers in Doem Bang Nang Buat District, Suphan Buri Province^[81]. The results found that village health volunteers who had been trained had more appropriate antibiotic use behaviors than those without training. While the target group of the strategic plan focused on children, adolescents, and working-age groups, the respondents did not prioritize this group (23.69% and 42.97%). However, raising knowledge and awareness about AMR and AMU was most sustainable if instilled in children and adolescents^[82-84] because of the wide-ranging impact that Strategic Plan 5 focuses on these target groups. The respondents also need to pay more attention to such target groups, making the impact yet to reach the goal. Therefore, the agencies should focus more on covering target groups to achieve the outcome according to the strategic plan. Village health volunteers (VHV) had a role in advising and disseminating health knowledge, including providing health education to change health behaviors, care, and monitoring to help solve public health problems, surveillance, prevention, and disease control^[85]. Therefore, it was appropriate that most of the key informants place importance on creating knowledge and awareness for

the VHVs because VHVs would help create knowledge about AMR among the people in the area. Anunta and Tonganake^[86]. studied the effectiveness of home visits and training programs in village health volunteers in Khwao, Selaphum, Roi Et. The study found that after providing the home visit program and training, the knowledge and practice of VHVs significantly improved. In addition, the study of Miain et al. found that the overall roles of the VHVs were at a high level^[87], so AMR training for VHVs was an essential part of the success of Strategy 5.

Respondents addressed the issues related to the knowledge and awareness of AMR and the appropriate use of antimicrobials in the activities organized by the respondents. When considering the study of Tangcharoensathien et al., "Population knowledge and awareness of antibiotic use and antimicrobial resistance: results from a national household survey in 2019 and changes from 2017", the survey results on knowledge issues found that respondents rated importance at more than 4.5 out of 5, except for "Taking antibiotics often has side-effects such as diarrhea," with an average score of less than 4. Meanwhile, the results of the National household survey in 2019, and its changes from 2017, found that people had increased knowledge on this issue (29.2 % in 2017, and 37.3 % in 2019)^[88]. On the other hand, "Unnecessary or inappropriate use of antibiotics could result in ineffective treatment or resistance" and "Antibiotics cannot kill viruses" had more wrong answers. Therefore, organizations responding to the survey may need to organize activities suitable for the area. For example, the content could be more accessible to attract more attention.

The shortage of staffing directly affects the implementation of Strategy 5 in areas where activities do not occur or activities are intermittent and only cover some areas. Personnel shortages were an obstacle to policy implementation. Berrou found that the shortage of antimicrobial stewardship program team members had also been suggested as a significant barrier to ASP adoption and implementation in Saudi Ministry of Health hospitals^[89]. Regarding personal competence and teamwork, it was sufficient to carry out activities according to Strategy 5 to be successful. The results of this study were consistent with Van Meter and Van Horn's point of view on the qualifications of personnel responsible for implementing policies^[90]. It was an important factor that influenced or affected the success or failure of policy implementation. The study results showed that the number of staff and officers carrying out continuous activities is important. The staffing should be sufficient or have direct responsibility and ongoing work. In that case, the activities would take various types to raise knowledge and awareness about AMR and AMU among target groups.

The executive factor is an important factor^[91] that made the implementation of Strategy 5 successful. Key informants said that executives provided support and motivation to work, affecting the implementation of Strategy 5 activities because workers would have more excellent morale. The results align with the study of Kotsombutt, who stated that the factors contributing to the way of command influenced work motivation to a large extent^[92]. It also aligns with Yavaprabhas' concept that leadership competence, leadership, and cooperation influence policy implementation's success^[93].

Public relations using appropriate channels would make Strategy 5 successful, especially fast, and appropriate communication channels would make Strategy 5 convenient and easy to drive. This study aligns with Prakobchart's study, which concluded that effective complaint handling and public relations management or policy information, such as brochures/placards/boards informing project information, clearly and easily understood and let the public know thoroughly^[94]. Therefore, the form of public relations suitable for the local context will make policy communication more accessible to the public.

The results show that if an agency had sufficient resources, it would result in the agency being able to implement the policy to achieve complete success⁸. Regarding the budget, most key informants reported that the budget needed to be increased for activities and had to manage other budgets for activities. This study was consistent with the study of Ratchaya that the budget for organizing activities to promote health needs to be increased^[95]. This study was also consistent with the recommendations of Koonjaetong on organizational support affecting the performance of committee members of the strong and sustainable disease and health hazard prevention and control district in Khon Khan province that there should be effective budget management^[96]. Therefore, the budget was a resource factor that must be sufficient and used correctly, thoroughly, efficiently, and for maximum benefit.

Key informants discussed economic, social aspect and political factors affecting the implementation of Strategy 5. This study was in line with the study of Jaruch Rittikrai, which found that social conditions, local influence and interest group pressures, and economic conditions had a high effect on policy implementation and local economic and political

pressures at both national and local levels had a moderate effect on policy implementation^[97]. This study was also consistent with the study of Ratakon Klunubol, which concluded that economic and social factors affect policy implementation. People with high incomes would be more involved in policy implementation. For political factors, a political party in the government would regularly come to help the community, and the people never objected to such policies^[39].

Emergency disease factors such as Covid-19 had a wide impact on the economy and society regionally and globally^[98]. The impact of Covid-19 significantly affected activities according to Strategy 5 because people could not participate in related activities, and those in charge of activities did not have time to perform activities according to Strategy 5. However, the New Normal way of life makes people clean, reducing the problem of bacterial infections. On the other hand, people used more antimicrobials due to misunderstandings^[99]. Therefore, emerging disease factors directly affect policy implementation.

Empowering and strengthening the networks and support roles of Networks to increase public understanding of AMR and the appropriate use of antimicrobials was a strategic action of Strategy 5 to raise public knowledge on AMR and awareness of the appropriate use of antimicrobials. This study was consistent with P.A. Brynard's relationship of factors influencing successful policy implementation that network use was utilizing one's personal-informed relationship with others to gain access to, or control over, resources^[100]. Therefore, the network was an important factor that drove the implementation of Strategy 5 in the area.

Limitation of the study

The limitation of this study was that phase I study did not include questions concerning with evaluating the actual activities undertaken by respondents to raise public knowledge and awareness of AMR and AMU. Therefore, it was impossible to know whether the respondents had an evaluation process to get the outcomes of the strategic plan or not. In phase II, the in-depth interviews were conducted online via the Zoom meeting program. As a result, there was no opportunity to discuss with the informants in person to obtain more information to support the study results.

Conclusions

This research could investigate the implementation process and activities of the National Strategic Plan on AMR Strategy 5 and the factors contributing to the relevant implementation process and activities. Most respondents knew about NSP-AMR and were assigned by the central authority to implement Strategy 5. The activities the respondents conducted provided the target groups with knowledge and awareness about AMR and AMU, and was primarily about knowledge training. They conducted activities to raise knowledge on AMR and AMU once a year. The media or channels they use to disseminate knowledge about AMR and AMU were mostly educational brochures. The target groups for which the respondents organized activities to raise knowledge about AMR and awareness of AMU were public health professionals, patients, and VHVs. Therefore, to make the strategic plan successful, relevant agencies should organize activities appropriate to the area's context and target groups because some activities may be suitable for specific target groups. If it covers all target groups, they should have a greater variety of

activities. Campaign media or materials should be suitable for all age groups in order to achieve the strategic goal, such as internet media or mass communication.

The investigation of the factors contributing to the implementation process and activities demonstrated 10 important factors with various themes. The policy factor was important and necessary, as the policy could solve the problems of AMR. Three themes of resource factors include allocated budget and media and materials. More budgets were needed to increase the number of target groups or hold more extensive activities. The media and materials used in organizing events to raise knowledge and awareness about AMR and the rational use of antimicrobials were enough. The central authority should produce and distribute educational materials about AMR and appropriate antimicrobial use to the locals. Environment factors were extracted into three major themes. Economic and social factors that caused people to lack awareness about AMU were that people still had to work to make a living. Political factors such as local politicians and authorities cooperated and supported exceptionally well. Newly emerging diseases had disrupted activities, according to Strategy 5. The effective coordination system among responsible organizations made the activity successful. The public relation factor helps the target group gain more access to information related to Strategy 5. The target group's attitude toward the policy, including VHV's, local administrative organizations, and adolescents, were all important target groups that made Strategy 5 successful. Executive Incentives and support are leadership and support of leaders that make practitioners want to participate in activities related to Strategy 5. The number of personnel carrying out activities according to Strategy 5

needed to be increased but the competency and teamwork were fine. The civil society networks factor, building the strength of the network will make the network more willing to work. The continuity of work to implement the policy was the work mechanism theme for this factor. The study shows the implementation process, activity, and contributing factors to driving the implementation of public policy (Strategy 5) at the local level. The finding can suggest improving the Thailand Antimicrobial Resistance Management Strategy implementation: Strategy 5 in the next phase, 2022-2026.

All ten factors are important and relevant to the success of the implementation of Strategy 5. All local agencies have strengths in these factors, but some should be fully supported. Resource factors such as budget, media, and equipment are important factors that stakeholders should support in order for the agencies to Related events can organize activities more frequently and cover target groups. Campaign media should be up-to-date, easy to understand, and use mass media. Regarding networking factors, central agencies should encourage networking between health professionals and civil society networks to foster strong cooperation. As for the coordination factor, there should be more coordination in transferring strategies to the areas to organize activities in all areas of the country. Personnel factors should be assigned to personnel directly responsible for the strategy so that work can be continued. Environmental factors are uncontrollable, so relevant agencies have to resolve this issue case-by-case.

Recommendation for practice and further studies

From the study, a recommendation for stakeholders is to apply this research to practice or develop the activities, and the second recommendation for future research. Stakeholders, including the Ministry of Public Health, Thai Food and Drug Administration, Health Service Support Department, Thai Health Promotion Foundation, and National Health Commission Office, should encourage relevant agencies, such as provincial public health offices and hospitals, to vigorously carry out activities according to Strategy 5. The activity that relevant agencies organized pattern should be adapted modernly. The FDA and THPF must produce especially the media to raise knowledge and awareness should be easily accessible and widespread, such as social media, Facebook, Twitter, TikTok, Instagram, or mass communication, according to the strategic plan, that will make the target group, namely children, teenagers, and working age, easily accessible. The budget is one resource factor theme that stakeholders should prioritize to support relevant agencies. Sufficient budget support for the area to carry out activities according to Strategy 5 will result in organizing activities appropriate to the local context. A sufficient budget will allow the responsible person to implement the activity to cover a large area and increase the number of target groups. The communication between agencies or stakeholders in implementing the policy should be clear and continuous. Stakeholders should focus on networking between the health and civil society sectors to implement Strategy 5 more successfully. Those involved should pay more attention to strategic plans. For further studies, there should be some quantitative research to find factors affecting the implementation of Strategy 5 more comprehensively.

REFERENCES

1. World Health Organization. *Antimicrobial resistance*. 2020 [cited 2021 January 14]; Available from: <https://www.who.int/en/news-room/fact-sheets/detail/antimicrobial-resistance>.
2. Ministry of Public Health and Ministry of Agriculture. *Thailand's National Strategic Plan on Antimicrobial Resistance 2017-2021*. 2017 [cited 2021 14 January]; Available from: https://rr-asia.oie.int/wp-content/uploads/2020/03/thailand_thailands-national-strategic-plan-on-amr-2017-2021.pdf.
3. O'Neill, J., *Antimicrobial Resistance: Tackling a crisis for the health and wealth of nations*. 2014.
4. Penkarn, K., B. Sirikwan, and P. Weerasak, *Thai RUD Indicators*. 2015, Health Systems Research Institute.
5. Isareethika, J.C., U. Nipaporn, and T. Pard, *System Dynamics Analysis of Factors affect Rational Antibiotic Use Behavior in Public Sector Provincial Level Model : A case study of Nakhon Nayok Province*. 2019, Health Systems Research Institute.
6. Taylor, J.A., T.S. Kwan-Gett, and E.M. McMahon, Jr., *Effectiveness of an educational intervention in modifying parental attitudes about antibiotic usage in children*. *Pediatrics*, 2003. **111**(5 Pt 1): p. e548-54.
7. Apisarnthanarak, A. and L.M. Mundy, *Correlation of antibiotic use and antimicrobial resistance in Pratumthani, Thailand, 2000 to 2006*. *Am J Infect Control*, 2008. **36**(9): p. 681-2.
8. Working Group to coordinate the implementation of the Thailand's National Strategic Plan on Antimicrobial Resistance 2017-2021, *Midterm Progress Report for Thailand's National Strategic Plan on AMR 2020*.
9. The European Commission, Directorate-General for Health and Food Safety, and Co-ordinated by the Directorate-General for Communication, *Flash Eurobarometer 444 – September/October 2016 “Antimicrobial Resistance” Report*. November 2016, European Union.
10. International Health Policy Program, National Statistical Office, and Ministry of Digital Economy and Society, *Knowledge and Awareness of Antibiotic Use and Antimicrobial Resistance: the 2019 National Health and Welfare Survey in Thailand*. 2019.
11. Voradej, C., *AN INTEGRATED THEORY OF PUBLIC POLICY IMPLEMENTATION*. 4 ed. 2009, Bangkok: Prigwhan graphic company 524.
12. Pansupa, P. and P. Nuttakrit, *The policy implementation of the Council of Cultural Affairs A case study on the Sub-district cultural councils in Samutsakorn province*. *Journal of Politics and Governance*, 2018. **8**(3): p. 132-151.
13. Mohrs, S., *Factors influencing the use of antibiotics and knowledge about antibiotic resistance in Jakarta*, in *Department of Women's and Children's Health IMCH/Internatonal Maternal and Child Health*. 2015, Uppsala University
14. Mark, J.P. *Penicillin: The Accidental Discovery That Changed Medicine Forever*. 2020 [cited 2021 20 January]; Available from:

- <https://www.flipscience.ph/health/penicillin/>.
15. Centers for Disease Control and Prevention, National Center for Emerging and Zoonotic Infectious Diseases (NCEZID), and Division of Healthcare Quality Promotion (DHQP). *How Antibiotic Resistance Happens*. 2020 [cited 2021 20 January]; Available from: <https://www.cdc.gov/drugresistance/about/how-resistance-happens.html>.
 16. Coates, A.R., G. Halls, and Y. Hu, *Novel classes of antibiotics or more of the same?* Br J Pharmacol, 2011. **163**(1): p. 184-94.
 17. Centers for Disease Control and Prevention, et al. *Antibiotic Resistance, Food, and Food Animals*. 2020; Available from: <https://www.cdc.gov/foodsafety/challenges/antibiotic-resistance.html>.
 18. Ventola, C., *The Antibiotic Resistance Crisis Part 1: Causes and Threats*. P&T, 2015. **40**(4).
 19. National Surveillance System for Antimicrobial Resistance Thailand, *Antimicrobial Resistance 2000-2020(6M)* 2020.
 20. Rawson, T.M., et al., *COVID-19 and the potential long-term impact on antimicrobial resistance*. J Antimicrob Chemother, 2020. **75**(7): p. 1681-1684.
 21. U.N. *World Health Leaders Agree on Action to Combat Antimicrobial Resistance, Warning of Nearly 10 Million Deaths Annually If Left Unchecked*. 21 SEPTEMBER 2016 [cited 2021 21 January].
 22. World Health Organization, *GLOBAL ACTION PLAN ON ANTIMICROBIAL RESISTANCE*. 2015, Geneva Switzerland.
 23. United States Government, *NATIONAL ACTION PLAN FOR COMBATING ANTIBIOTIC-RESISTANT BACTERIA 2020-2025*. October 2020.
 24. World Health Organization, *European strategic action plan on antibiotic resistance 2011-2020*. 2011.
 25. Ministry of Health and Ministry of Agriculture, *National Strategic Plan on Antimicrobial Resistance in Lao PDR 2019 - 2023*. 2019, Vientiane.
 26. Ministry of Health, *National action plan on antimicrobial resistance Indonesia 2017-2019*. 2017, Indonesia.
 27. Inter-Agency Committee on Antimicrobial Resistance (ICAMR), et al., *Philippine National Action Plan on Antimicrobial Resistance 2019-2023*. 2019.
 28. WHO, FAO, and OIE, *MONITORING GLOBAL PROGRESS ON ANTIMICROBIAL RESISTANCE: TRIPARTITE AMR COUNTRY SELF-ASSESSMENT SURVEY (TRACSS) 2019-2020, Global analysis report*. 2021: 20 Avenue Appia, 1211 Geneva 27, Switzerland. .
 29. The Healthcare Infection Control Practices Advisory Committee, *Landscape of antimicrobial resistance situation and action in Thailand*. 2015, Bangkok: Graphic and design.
 30. Angkana, S., et al., *Evolution of Collaborations under the "One Health" Concept in Thailand*. Journal of Health Systems Research, 2014. **8**(3): p. 293-305.
 31. Ogyu, A., et al., *National action to combat AMR: a One-Health approach to assess policy priorities in action plans*. BMJ Glob Health, 2020. **5**(7).
 32. Patcharaporn, A. and K. Wipada, *One Health : How can Nurse be Involved*. Nursing Journal, 2013. **40**: p. 143-149.
 33. Niracha, A., K. Pornwilai, and T. Apinya, *1 Decade of Health Assembly "Relive*

- the past, look forward to the future"*, ed. 1. 2013, Nonthaburi: 3 D PRINTING EQUIPMENT
34. Gerdruang, A., *Principle of Public Policy Evaluation*, ed. 1. 2018, Bangkok: Chulalongkorn University Printing House. 164.
 35. Mayuree, A., *Pulic Policy*, ed. 2. 2013, Bangkok: ACTIVE PRINT COMPANY LIMITED. 338.
 36. Attewell, P. and D.R. Gerstein, *Government Policy and Local Practice*. American Sociological Review, 1979. **44**(2): p. 311-327.
 37. Dieckmann, P., et al., *Goals, Success Factors, and Barriers for Simulation-Based Learning*. Simulation & Gaming, 2012. **43**(5): p. 627-647.
 38. Poonsub, R., *FACTORS FOR SUCCESS AND FAILURE OF COMPLAINTS MANAGEMENT OF BABGKOK METROPOLITANADMINISTRATION : CASE OF COMPLAINTS CALL CENTER 1555*, in *Executive Program in Public Administration and Public Affairs Political Science*. 2016, Thammasat University.
 39. Ratakon, K., *Factors Affecting the Success of the Implementation of Good Governance Policy: A Case Study of Tambol Administrative Organization in the Central Region.*, in *Graduate School*. 2008, Srinakarinwirot University: Bangkok.
 40. Sakkarin, S. and S. Praon, *The Success of Policy Implementation in Narathiwat: A Case Study of Action Plans and Problem-Solving for Southern Border Provinces Development, 2015–2017*. Thai Journal of Public Administration, 2019. **17**(2).
 41. Santapawit, M., *Factors Impinging Upon the Success of Narcotics Suppression Bureau in Implementing Narcotics Resolution Policy*. EAU HERITAGE Journal Socail Science and Humanity, 2015. **5**(2): p. 176-187.
 42. Borpit, R., *Factors Influencing the Success of the One Stop Service Policy Implementation : A Case Study of the Sai Mai District Office, Bangkok*, in *Graduated School of Social and Environmental Development*. 2009, National Institute of Development Administration.
 43. Itthichai, S., *FACTORS AFFECTING THE IMPLEMENTATION OF THE PEACE BUILDING PROCESS IN THE FOUR SOUTHERNMOST PROVINCES OF THAILAND POLICY : A CASE STUDY OF PATTANI PROVINCE*. Journal of Information and Learning, 2010. **21**(1): p. 86-109.
 44. Patpon, K., *The Success Factors of Rajamangala University of Technology Suvarnabhumi Operations Quality Assurance*. 2014, Rajamangala University of Technology Suvarnabhumi: Office of Educational Quality Rajamangala University of Technology.
 45. Thanathep, T., *Factors that Affect the Successful Implementation the Policy of Transparency, Promote Moral and Ethics of Land Development Department*. Integrated Social Science Journal, 2015. **2**(2).
 46. Khan, M.S., et al., *What are the barriers to implementing national antimicrobial resistance action plans? A novel mixed-methods policy analysis in Pakistan*. Health Policy Plan, 2020. **35**(8): p. 973-982.
 47. Bhattacharya, A., et al., *A process evaluation of the UK-wide Antibiotic Guardian campaign: developing engagement on antimicrobial resistance*. J Public Health (Oxf), 2017. **39**(2): p. e40-e47.

48. Kanchaka, S., *Knowledge, attitude, behavior toward safety and related factors of workers in production department of steel furniture industrial factory in Samut Prakan Province*, in *Department of Psychiatry, Faculty of Medicine*. 2003, Chulalongkorn University.
49. Merikle, P.M., *Toward a definition of awareness*. *Bulletin of the Psychonomic Society*, 1984. **22**(5): p. 449-450.
50. Phetphum, C., *Health behavior: Concept, theory and application*. 2 ed. 2018, Phitsanulok: Naresuan University Publishing House.
51. Shehadeh, M., et al., *Knowledge, attitudes and behavior regarding antibiotics use and misuse among adults in the community of Jordan. A pilot study*. *Saudi Pharm J*, 2012. **20**(2): p. 125-33.
52. Pavyde, E., et al., *Public Knowledge, Beliefs and Behavior on Antibiotic Use and Self-Medication in Lithuania*. *Int J Environ Res Public Health*, 2015. **12**(6): p. 7002-16.
53. Mouhieddine, T.H., et al., *Assessing the Lebanese population for their knowledge, attitudes and practices of antibiotic usage*. *J Infect Public Health*, 2015. **8**(1): p. 20-31.
54. Jamhour, A., et al., *Antibiotic knowledge and self-medication practices in a developing country: A cross-sectional study*. *Am J Infect Control*, 2017. **45**(4): p. 384-388.
55. Zajmi, D., et al., *Public knowledge, attitudes and practices regarding antibiotic use in Kosovo*. *Pharm Pract (Granada)*, 2017. **15**(1): p. 827.
56. Rungthip, K.-a., et al., *Antimicrobial using behaviors: case study of Ban Kang Pla population, Chaiyapruak Sub-district, Mueang District, Loei Province*. *UBRU JOURNAL FOR PUBLIC HEALTH RESEARCH*, 2019. **8**(2): p. 43-54.
57. Kanont, A., et al., *Knowledge and Awareness on Rational Use of Antibiotics among First Year Students of Mahidol University in the Academic Year 2011*. *Journal of Health Systems Research*, 2012. **6**(3).
58. Haenssger, M.J., et al., *Antibiotic knowledge, attitudes and practices: new insights from cross-sectional rural health behaviour surveys in low-income and middle-income South-East Asia*. *BMJ Open*, 2019. **9**(8): p. e028224.
59. Jirachai, M., R. Jirawat, and C. Em-on, *The Study of Consumer's Knowledge and Behavior in Using Antibiotics at Community Drug Store in Pathum Thani Province*. *EAU Heritage Journal*, 2012.
60. Wanida, C. and C. Kornkaew, *The Meaning of Ya- Kae- Akseb in Lay's Perspective: A Case Study of Ban Nakhok, Moo 3, Srisongrak Subdistrict, Muang District, Loei Province*. *Isan Journal of Pharmaceutical Sciences*, 2014. **9**: p. 93-98.
61. Demore, B., et al., *Public knowledge and behaviours concerning antibiotic use and resistance in France: a cross-sectional survey*. *Infection*, 2017. **45**(4): p. 513-520.
62. Pereko, D.D., M.S. Lubbe, and S.Y. Essack, *Public knowledge, attitudes and behaviour towards antibiotic usage in Windhoek, Namibia*. *Southern African Journal of Infectious Diseases*, 2015. **30**(4): p. 134-137.
63. Almutairi Masaad Awadh, et al., *Assessment of Knowledge, Attitude and Practice Regarding Antibiotics Misuse among the Public in Saudi Arabia*. *The Egyptian Journal of Hospital Medicine*, 2017. **69**(5): p. 2405-2411.

64. Jose, J., et al., *A study assessing public knowledge, belief and behavior of antibiotic use in an omani population*. Oman Med J, 2013. **28**(5): p. 324-30.
65. Lin, L., et al., *Factors influencing inappropriate use of antibiotics in outpatient and community settings in China: a mixed-methods systematic review*. BMJ Glob Health, 2020. **5**(11).
66. Ancillotti, M., et al., *Public awareness and individual responsibility needed for judicious use of antibiotics: a qualitative study of public beliefs and perceptions*. BMC Public Health, 2018. **18**(1): p. 1153.
67. Shinnawat, S. and P. Thitima, *5 behaviors that affect the development of antimicrobial resistance*. , in *Ya-wipak*, S. Yupadee and J. Sorachai, Editors. 2018, Drug System and Monitoring Center: Bangkok.
68. Nucharaphon, S. and K. Nithra, *Factors influencing antibiotics use behavior in sore throat, clean wound, and acute diarrhea among Village Health Volunteers*. Journal of The Royal Thai Army Nurses, 2018. **19**: p. 166-173.
69. Patson, O., K. Jeeraporn, and T. Wanalada, *Factors Predicting Antibiotic use Behavior Among Healthcare Volunteers in Pathumthani Province, Thailand*. Journal of The Royal Thai Army Nurses, 2019. **20**(101-109).
70. Junko Saito, et al., *Factors influencing the National School Health Policy implementation in Lao PDR: a multi-level case study*. Health Promotion International 2014. **30**(4).
71. Ali, M.M., *The Factors Affecting Health Policy Implementation Performance in Primary Health Care: An Empirical Study of the Sub-district Level Health Facilities in Bangladesh*, in *Graduate School of Public Administration*. 2017, NIDA: Bangkok.
72. Ann F. Chou, et al., *Factors Affecting the Implementation of Infection Control Strategies*. Health Care Management REVIEW 2008. **33**(4): p. 308-322.
73. Parween Sana, et al., *Public Health Interventions to Improve Antimicrobial Resistance Awareness and Behavioural Change Associated with Antimicrobial Use: A Systematic Review Exploring the Use of Social Media*. Antibiotics, 2022. **11**(5): p. 669.
74. Rabia Ahmed, et al., *Aston University's Antimicrobial Resistance (AMR) Roadshow: raising awareness and embedding knowledge of AMR in key stage 4 learners*. Infection Prevention in Practice, 2020. **2**(2).
75. Muangtum, N. *16 Thai Social Media Behavior Stat & Insight 2023 from We Are Social*. 2023 [cited 2023; Available from: <https://www.everydaymarketing.co/media/social-media/16-thai-social-media-behavior-stat-insight-2023-from-we-are-social/>].
76. R. Bruyndonckx, et al., *Antibiotic use and resistance in Belgium: the impact of two decades of multi-faceted campaigning*. International Journal of Clinical and Laboratory Medicine, 2021. **76**(4): p. 280-288.
77. Cliodna A., et al., *The English antibiotic awareness campaigns: did they change the public's knowledge of and attitudes to antibiotic use? .* Journal of Antimicrobial Chemotherapy, 2010. **65**(7): p. 1526–1533.
78. Mayadah B. Shehadeh, Ghadeer A.R.Y. Suaifan, and E.A. Hammad, *Active educational intervention as a tool to improve safe and appropriate use of antibiotics*. Saudi Pharmaceutical Journal, 2016. **24**(5): p. 611-615.
79. James Redfern, et al., *Raising awareness of antimicrobial resistance among the*

- general public in the UK: the role of public engagement activities.* JAC-Antimicrobial Resistance, 2020. **2**(1): p. d1aa012.
80. Nkaiwuatei, J., *Students Against Superbugs (SAS) Africa.* ACS Infectious Diseases, 2022. **8**(7): p. 1204-1206.
 81. W., N., *Behavior in Using Antibiotics of Village Health Volunteers Doembaangnangbuat District Suphanburi Province.* JMND, 2020. **7**(7): p. 213-218.
 82. Lecky, D.M., et al., *Development of an educational resource on microbes, hygiene and prudent antibiotic use for junior and senior school children.* J Antimicrob Chemother, 2011. **66** Suppl 5: p. v23-31.
 83. Guo, H., et al., *The Associations between Poor Antibiotic and Antimicrobial Resistance Knowledge and Inappropriate Antibiotic Use in the General Population Are Modified by Age.* Antibiotics (Basel), 2021. **11**(1).
 84. Hayes, C.V., et al., *Knowledge and attitudes of adolescents towards the human microbiome and antibiotic resistance: a qualitative study.* JAC Antimicrob Resist, 2021. **3**(2): p. dlab039.
 85. Somtakul Rasiri, Suchada Intarakumhang Na Rachasima, and T. Rasiri, *The role of thai public health volunteers.* Journal of Health Research and Development, Nakhon Ratchasima Provincial Public Health Office 2021. **7**(2): p. 80-97.
 86. Prapas Anunta and J. Tonganake, *The effectiveness of home visit and training program in village health volunteers in Khwao, Selaphum, Roi Et. 2012.* Journal of the office of DPC 7 Khon Kaen, 2019. **20**(1): p. 1-8.
 87. Paruehaskanya Boonlob, et al., *Duty Performance According to the Roles of Village Health Volunteers (VHV.) In Cha-am Municipality, Cha-Am District, Phetchaburi Province.* The Journal of Sirindhornparithat, 2020. **21**(2).
 88. Tangcharoensathien V., et al., *Population knowledge and awareness of antibiotic use and antimicrobial resistance: results from national household survey 2019 and changes from 2017.* BMC Public Health 21. **21**.
 89. Saleh Alghamdi, et al., *Barriers to implementing antimicrobial stewardship programmes in three Saudi hospitals: Evidence from a qualitative study.* Journal of Global Antimicrobial Resistance 2019. **18**: p. 284-290.
 90. Van Meter and V. Horn, *The policy implementation process: A conceptual framework.* Administration and society 1975. **6**(5): p. 445-486.
 91. Wattana Kaewoyaem, et al., *The decentralization through transfer Sub-District Health Promoting Hospital to Local Government Organizations.* Ratanabuth Journal 2023. **5**(1).
 92. Kotsombutt, S., . *The Correlation Between Work Motivation And Performance Competency Of Personnel For Developing Organization To Be Quality.* Department of health Service Support Journal, 2023. **19**(1): p. 29-36.
 93. Yavaprabhas, S., *Public policy*, ed. 6. 2005, Bangkok: Chulalongkorn University Press.
 94. Prakobchart, C. *Policy implementation of the policy on universal health care coverage of Hua Hin Hospital in Prachuap Khiri Khan Province.* in *The 3rd National Academic Conference and Research Presentation Toward The Second Decade: Sustainability Knowledge on Research Integration.* 2016. Nakorn Ratchasima, Thailand: Journal of Nakornratchasima Colledge.
 95. Rattanataworn, R., *The Policy Implementation Model of Health Promotion in*

- Basic Education Institutions*. EAU HERITAGE JOURNAL Social Science and Humanity 2015. **5**(3): p. 281-293.
96. Ratchaneekorn Koonjaetong and C. Sriruecha, *Organizational Support Affecting The Strong and Sustainable Disease and health hazard Prevention and Control District in Khon Kaen Province*. Journal of The Office of ODPC 6 Khon Kaen 2012. **19**(2): p. 17-26.
97. Rittikrai, J., *Affecting Factors of the Effectiveness of Prevention and Enforcement of Drugs and Narcotics Widespread Policy Implementation in Higher Education Institutions in Prachuapkirikhan Province*. The Journal of Development Administration Research 2016. **6**(2): p. 68-79.
98. Sangwongdee, P.P., *Global Crisis in the Outbreak of Emerging Infectious Diseases: The Role of the World Health Organization, a Situation in Thailand and a New Normal*. Journal of Social Synergy 2020. **11**(1): p. 88-108.
99. Gwenan M Knight, et al., *Antimicrobial resistance and COVID-19: Intersections and implications*. eLife, 2021. **10**: p. e64139.
100. Brynard, P.A., *Mapping the factors that influence policy implementation*. Journal of Public Administration 2009. **44**(3.1): p. 557-577.



APPENDIX



จุฬาลงกรณ์มหาวิทยาลัย
CHULALONGKORN UNIVERSITY

APPENDIX I

Certificate of approval for ethical human research.



จุฬาลงกรณ์มหาวิทยาลัย
CHULALONGKORN UNIVERSITY



บันทึกข้อความ

ส่วนงาน คณะกรรมการพิจารณาจริยธรรมการวิจัยในคน กลุ่มสถาบัน ชุดที่ 1 โทร.0-2218-3202, 83049
 ที่ จว 027/2565 (ผ) วันที่ 4 กุมภาพันธ์ 2565
 เรื่อง แจ้งผลผ่านการพิจารณาจริยธรรมการวิจัย

เรียน คณบดีคณะเภสัชศาสตร์

สิ่งที่ส่งมาด้วย เอกสารแจ้งผ่านการรับรองผลการพิจารณา

ตามที่นิสิต/บุคลากรในสังกัดของท่านได้เสนอโครงการวิจัยเพื่อขอรับการพิจารณาจริยธรรมการวิจัย จากคณะกรรมการพิจารณาจริยธรรมการวิจัยในคน กลุ่มสถาบัน ชุดที่ 1 จุฬาลงกรณ์มหาวิทยาลัย นั้น ในกรณีนี้ กรรมการผู้ทบทวนหลักได้เห็นสมควรให้ผ่านการพิจารณาจริยธรรมการวิจัยได้ ดังนี้

โครงการวิจัยที่ 212.2/64 เรื่อง การสำรวจการนำแผนยุทธศาสตร์แห่งชาติเพื่อจัดการ การดื้อยาต้านจุลชีพไปปฏิบัติในการใช้ยาต้านจุลชีพอย่างเหมาะสม (EXPLORING THE IMPLEMENTATION OF NATIONAL STRATEGIC PLAN ON ANTIMICROBIAL RESISTANCE IN THE APPROPRIATE USE OF ANTIMICROBIALS) ของ นายชินวัจน์ แสงอังคณาสิ นิสิตระดับมหาบัณฑิต ภาควิชาเภสัชศาสตร์และบริหาร

จึงเรียนมาเพื่อโปรดทราบ

อ. วัชรวิทย์ มีภักดี

(ผู้ช่วยศาสตราจารย์ ดร.ระวีพันธ์ มีภักดี)

กรรมการและเลขานุการ

คณะกรรมการพิจารณาจริยธรรมการวิจัยในคน
 กลุ่มสถาบัน ชุดที่ 1 จุฬาลงกรณ์มหาวิทยาลัย



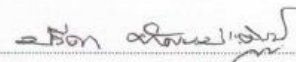
คณะกรรมการพิจารณาจริยธรรมการวิจัยในคน กลุ่มสหสถาบัน ชุดที่ 1 จุฬาลงกรณ์มหาวิทยาลัย
254 อาคารจามจุรี 1 ชั้น 2 ถนนพญาไท เขตปทุมวัน กรุงเทพฯ 10330
โทรศัพท์: 0-2218-3202, 0-2218-3049 E-mail: eccu@chula.ac.th


COA No. 027/2565

ใบรับรองโครงการวิจัย

โครงการวิจัยที่ 212.2/64 : การสำรวจการนำแผนยุทธศาสตร์แห่งชาติเพื่อจัดการ การติดยาต้านจุลชีพไปปฏิบัติในการใช้ยาต้านจุลชีพอย่างเหมาะสม
ผู้วิจัยหลัก : นายชินวิจน์ แสงอังคณาสิทธิ์
หน่วยงาน : คณะเภสัชศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

คณะกรรมการพิจารณาจริยธรรมการวิจัยในคน กลุ่มสหสถาบัน ชุดที่ 1 จุฬาลงกรณ์มหาวิทยาลัย ได้พิจารณา โดยใช้หลัก ของ Belmont Report 1979, Declaration of Helsinki 2013, Council for International Organizations of Medical Sciences (CIOM) 2016, มาตรฐานคณะกรรมการจริยธรรมการวิจัยในคน (มคจจ.) 2560, นโยบายแห่งชาติและแนวทางปฏิบัติการวิจัยในมนุษย์ 2558 อนุมัติให้ดำเนินการศึกษาวิจัยเรื่องดังกล่าวได้

ลงนาม 
(รองศาสตราจารย์ นายแพทย์ปรีดา ทิศนประดิษฐ์)
ประธาน

ลงนาม 
(ผู้ช่วยศาสตราจารย์ ดร.ระวีพันธ์ มิ่งภักดิ์)
กรรมการและเลขานุการ

วันที่รับรอง : 4 กุมภาพันธ์ 2565

วันหมดอายุ : 3 กุมภาพันธ์ 2566

เอกสารที่คณะกรรมการรับรอง

- 1) โครงการวิจัย
- 2) ผู้วิจัย
- 3) เอกสารข้อมูลสำหรับผู้มีส่วนร่วมในการวิจัยและหนังสือแสดงความยินยอมของผู้มีส่วนร่วมในการวิจัย
- 4) แบบสอบถามและแนวคำถาม

เลขที่โครงการวิจัย : 212-2/64
- 4 ก.พ. 2565
- 3 ก.พ. 2565
วันหมดอายุ

เงื่อนไข

1. ข้าพเจ้ารับทราบว่าเป็นการวิจัยจริยธรรม หากดำเนินการกับข้อมูลการวิจัยก่อนได้รับการอนุมัติจากคณะกรรมการพิจารณาจริยธรรมการวิจัย
2. หากใบรับรองโครงการวิจัยหมดอายุ การดำเนินการวิจัยต้องยุติ เมื่อต้องการต่ออายุต้องขออนุมัติใหม่ล่วงหน้าไม่ต่ำกว่า 1 เดือน พร้อมส่งรายงานความก้าวหน้าการวิจัย
3. ต้องดำเนินการวิจัยตามที่ระบุไว้ในโครงการวิจัยอย่างเคร่งครัด
4. ใช้เอกสารข้อมูลสำหรับผู้มีส่วนร่วมในการวิจัย ใบยินยอมของกลุ่มประชากรหรือผู้มีส่วนร่วมในการวิจัย และเอกสารเชิญเข้าร่วมวิจัย (ถ้ามี) เฉพาะที่ประทับตราคณะกรรมการเท่านั้น
5. หากเกิดเหตุการณ์ไม่พึงประสงค์ร้ายแรงในสถานที่เก็บข้อมูลที่ขออนุมัติจากคณะกรรมการ ต้องรายงานคณะกรรมการภายใน 5 วันทำการ
6. หากมีการเปลี่ยนแปลงการดำเนินการวิจัย ให้ส่งคณะกรรมการพิจารณารับรองก่อนดำเนินการ
7. หากยุติโครงการวิจัยก่อนกำหนดต้องแจ้งคณะกรรมการฯ ภายใน 2 สัปดาห์พร้อมคำชี้แจง
8. โครงการวิจัยไม่เกิน 1 ปี ส่งแบบรายงานสิ้นสุดโครงการวิจัย (AF 01-15) และบทความผลการวิจัยภายใน 30 วัน เมื่อโครงการวิจัยเสร็จสิ้น สำหรับโครงการวิจัยที่เป็นวิทยานิพนธ์ให้ส่งบทความผลการวิจัย ภายใน 30 วัน เมื่อโครงการวิจัยเสร็จสิ้น
9. โครงการวิจัยที่มีหลายระยะ จะรับรองโครงการเป็นระยะ เมื่อดำเนินการวิจัยในระยะแรกเสร็จสิ้นแล้ว ให้ดำเนินการส่งรายงานความก้าวหน้า พร้อมโครงการวิจัยและเอกสารที่เกี่ยวข้องในระยะถัดไป
10. คณะกรรมการฯ สงวนสิทธิ์ในการตรวจเยี่ยมเพื่อติดตามการดำเนินการวิจัย
11. สำหรับโครงการวิจัยจากภายนอก ผู้บริหารส่วนงาน กำกับการดำเนินการวิจัย

APPENDIX II
Phase I questionnaire



แบบสอบถามสำนักงานสาธารณสุขจังหวัด และสำนักอนามัยกรุงเทพมหานคร

ส่วนที่ 1 ประวัติส่วนตัว

1. สถานที่ทำงาน
2. วิชาชีพ
3. ตำแหน่ง
4. อำเภอ
5. จังหวัด

ส่วนที่ 2 คำถามเกี่ยวกับแผนยุทธศาสตร์การจัดการการติดยาต้านจุลชีพประเทศไทย พ.ศ. 2560-2564

คำถาม	ข้อคำตอบ	
	รู้จัก	ไม่รู้จัก
1. ท่านรู้จักแผนยุทธศาสตร์การจัดการการติดยาต้านจุลชีพประเทศไทย พ.ศ. 2560-2564 หรือไม่	รู้จัก	ไม่รู้จัก
2. ท่านได้รับมอบหมายจากหน่วยงานส่วนกลาง ให้ดำเนินการตามยุทธศาสตร์ที่5 การส่งเสริมความรู้ด้านเชื้อดื้อยาและความตระหนักรู้ด้านการใช้ยาต้านจุลชีพอย่างเหมาะสมแก่ประชาชน หรือไม่	ได้รับ	ไม่ได้รับ
3. หน่วยงานท่านเคยจัดกิจกรรมหรือมาตรการเพื่อสร้างความรู้และความตระหนักรู้เกี่ยวกับเชื้อดื้อยา และการใช้ยาต้านจุลชีพอย่างเหมาะสม (หากไม่เคยให้ข้ามไปตอบส่วนที่ 4)	เคย	ไม่เคย

ส่วนที่ 3 คำถามเกี่ยวกับการดำเนินกิจกรรมตามยุทธศาสตร์ที่5 การส่งเสริมความรู้ด้านเชื้อดื้อยาและความตระหนักด้านการใช้ยาต้านจุลชีพอย่างเหมาะสมแก่ประชาชน หรือไม่

คำถาม	ข้อคำตอบ
1. กิจกรรมที่ท่านจัดหรือดำเนินการเกี่ยวกับเชื้อดื้อยา และการใช้ยาต้านจุลชีพอย่างเหมาะสม ในช่วงปีพ.ศ. 2560-2564	
1.1 ชื่อกิจกรรมมีอะไรบ้าง (ตอบเฉพาะกิจกรรมหลักๆที่ท่านจำได้)
1.2 ลักษณะของกิจกรรมที่จัด	
<input type="checkbox"/> ออกหน่วยอนามัย <input type="checkbox"/> อบรมความรู้ในพื้นที่ <input type="checkbox"/> จัดนิทรรศการ <input type="checkbox"/> เสี่ยงตามสาย	
<input type="checkbox"/> แจกแผ่นพับรณรงค์ <input type="checkbox"/> ทำสื่อวิดีโอ <input type="checkbox"/> ทำสื่อออนไลน์ <input type="checkbox"/> เขียนบทความวิชาการ	
<input type="checkbox"/> เผยแพร่โปสเตอร์ให้ความรู้ <input type="checkbox"/> อื่นๆ โปรดระบุ.....	
2. กิจกรรมต่าง ๆ ที่ท่านจัดหรือดำเนินการให้ความสำคัญกับประเด็นเนื้อหาเหล่านี้ มากน้อยเพียงใด (5=ให้ความสำคัญมากที่สุด, 0=ไม่ให้ความสำคัญ)	
2.1 ประเด็นด้านความรู้ (Knowledge)	
2.1.1 การใช้ยาฆ่าเชื้อ/ยาปฏิชีวนะโดยไม่จำเป็น ทำให้การรักษาไม่ได้ผลหรือเกิดเชื้อดื้อยา	<input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0
2.1.2 ควรหยุดใช้ยาฆ่าเชื้อ/ยาปฏิชีวนะเมื่อรับประทานครบถ้วนตามที่แพทย์/บุคลากรทางการแพทย์แนะนำ	<input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0
2.1.3 การได้รับยาฆ่าเชื้อ/ยาปฏิชีวนะบ่อยครั้งก่อให้เกิดผลข้างเคียงที่ไม่พึงประสงค์ เช่น ท้องเสีย ฯลฯ	<input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0
2.1.4 ยาฆ่าเชื้อ/ยาปฏิชีวนะกับยาแก้อักเสบไม่ใช่ยาชนิดเดียวกัน	<input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0
2.1.5 ยาฆ่าเชื้อ/ยาปฏิชีวนะไม่สามารถรักษาไข้หวัดได้	<input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0
2.1.6 ยาฆ่าเชื้อ/ยาปฏิชีวนะไม่สามารถฆ่าเชื้อไวรัสได้	<input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0

<p>2.2 ประเด็นด้านความตระหนักรู้ (Awareness)</p> <p>2.2.1 ควรใช้ยาฆ่าเชื้อ/ยาปฏิชีวนะที่แพทย์หรือบุคลากรทางแพทย์สั่งให้เท่านั้น</p> <p><input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0</p> <p>2.2.2 ไม่ควรเก็บยาฆ่าเชื้อ/ยาปฏิชีวนะที่เหลือ เพื่อใช้ในการเจ็บป่วยครั้งต่อไป</p> <p><input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0</p> <p>2.2.3 ถ้าได้รับยาฆ่าเชื้อ/ยาปฏิชีวนะโดยไม่จำเป็นจะทำให้เกิดเชื้อ ดื้อยาได้</p> <p><input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0</p> <p>2.2.4 เชื้อดื้อยาเป็นปัญหาที่ทุกคนควรให้ความสำคัญ</p> <p><input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0</p> <p>2.2.5 เชื้อดื้อยาจะส่งผลกระทบต่อสุขภาพต่อตนเองและคนในครอบครัว</p> <p><input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0</p> <p>2.2.6 การใช้ยาฆ่าเชื้อ/ยาปฏิชีวนะอย่างถูกต้องจะช่วยให้ลดความเสี่ยงที่จะได้รับเชื้อดื้อยา</p> <p><input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0</p>	
<p>3. สื่อ, ช่องทาง หรือรูปแบบที่ท่านใช้ในการเผยแพร่ความรู้เกี่ยวกับเชื้อดื้อยาและการใช้ยาต้านจุลชีพที่เหมาะสม มีอะไรบ้าง? (ตอบได้มากกว่า 1 ข้อ)</p>	<p><input type="checkbox"/> แผ่นพับรณรงค์</p> <p><input type="checkbox"/> สื่อวิดีโอ</p> <p><input type="checkbox"/> Spot โฆษณาทางวิทยุ</p> <p><input type="checkbox"/> สื่อออนไลน์ เช่น Facebook Page, Twitter, อื่น ๆ</p> <p><input type="checkbox"/> เสียงตามสาย</p> <p><input type="checkbox"/> บทความทางวิชาการ</p> <p><input type="checkbox"/> โปสเตอร์ให้ความรู้</p> <p><input type="checkbox"/> อื่นๆ ระบุ.....</p>
<p>4. ท่านจัดกิจกรรมบ่อยเพียงใด</p>	<p><input type="checkbox"/> ทุกเดือน</p> <p><input type="checkbox"/> ทุก 3 เดือน</p> <p><input type="checkbox"/> ทุก 6 เดือน</p> <p><input type="checkbox"/> ปีละครั้ง</p> <p><input type="checkbox"/> อื่นๆ ระบุ.....</p>

<p>5. กลุ่มเป้าหมายคือ กลุ่มใด (ตอบได้มากกว่า 1 ข้อ)</p>	<p><input type="checkbox"/> ผู้ป่วย</p> <p><input type="checkbox"/> ผู้สูงอายุ</p> <p><input type="checkbox"/> ประชาชนวัยทำงาน</p> <p><input type="checkbox"/> ประชาชนวัยรุ่น</p> <p><input type="checkbox"/> บุคลากรสาธารณสุข</p> <p><input type="checkbox"/> อสม./อสส.</p> <p><input type="checkbox"/> นักเรียน/นักศึกษา</p> <p><input type="checkbox"/> พระ/ผู้นำศาสนา</p> <p><input type="checkbox"/> ผู้นำชุมชน</p> <p><input type="checkbox"/> อื่น ๆ ระบุ</p> <p>.....</p>
<p>6. กิจกรรมที่ท่านจัดครอบคลุมพื้นที่ในจังหวัดท่านร้อยละเท่าไร (โดยประมาณ)</p>	<p>.....</p>

ส่วนที่ 4 โปรดช่วยแนะนำหน่วยงานในสังกัดของท่าน (เช่น โรงพยาบาลทั่วไป โรงพยาบาลชุมชน โรงพยาบาลส่งเสริมสุขภาพตำบล ศูนย์บริการสาธารณสุข กทม. เป็นต้น) ที่มีการดำเนินงานตาม ยุทธศาสตร์ที่ 5 มาไม่น้อยกว่า 3 ปี ในพื้นที่ที่ท่านรับผิดชอบอย่างน้อย 6 หน่วยงานเพื่อให้ทาง โครงการขออนุญาตไปเก็บข้อมูลเพิ่มเติม

1. ชื่อหน่วยงาน

2. ข้อมูลอื่นๆ (ที่ท่านเห็นว่าเป็นประโยชน์ต่อโครงการ)

.....

แบบสอบถามโรงพยาบาลสังกัดกระทรวงสาธารณสุข โรงพยาบาลส่งเสริมสุขภาพตำบล และ
ศูนย์บริการสาธารณสุข กรุงเทพมหานคร

ส่วนที่ 1 ประวัติส่วนตัว

1. สถานที่ทำงาน
2. วิชาชีพ
3. ตำแหน่ง
4. อำเภอ
5. จังหวัด

ส่วนที่ 2 คำถามเกี่ยวกับแผนยุทธศาสตร์การจัดการการติดยาต้านจุลชีพประเทศไทย พ.ศ. 2560-2564

คำถาม	ข้อคำตอบ	
	รู้จัก	ไม่รู้จัก
1. ท่านรู้จักแผนยุทธศาสตร์การจัดการการติดยาต้านจุลชีพประเทศไทย พ.ศ. 2560-2564 หรือไม่	รู้จัก	ไม่รู้จัก
2. ท่านได้รับมอบหมายจากหน่วยงานส่วนกลาง ให้ดำเนินการตามยุทธศาสตร์ที่5 การส่งเสริมความรู้ด้านเชื้อดื้อยาและความตระหนักรู้ด้านการใช้ยาต้านจุลชีพอย่างเหมาะสมแก่ประชาชน หรือไม่	ได้รับ	ไม่ได้รับ
3. หน่วยงานท่านเคยจัดกิจกรรมหรือมาตรการเพื่อสร้างความรู้และความตระหนักรู้เกี่ยวกับเชื้อดื้อยา และการใช้ยาต้านจุลชีพอย่างเหมาะสม	เคย	ไม่เคย

ส่วนที่ 3 คำถามเกี่ยวกับการดำเนินกิจกรรมตามยุทธศาสตร์ที่5 การส่งเสริมความรู้ด้านเชื้อดื้อยาและความตระหนักด้านการใช้ยาต้านจุลชีพอย่างเหมาะสมแก่ประชาชน หรือไม่

คำถาม	ข้อคำตอบ
<p>1. กิจกรรมที่ท่านจัดหรือดำเนินการเกี่ยวกับเชื้อดื้อยา และการใช้ยาต้านจุลชีพอย่างเหมาะสม ในช่วงปีพ.ศ. 2560-2564</p> <p>1.1 ชื่อกิจกรรมมีอะไรบ้าง (ตอบเฉพาะกิจกรรมหลักๆที่ท่านจำได้)</p> <p>.....</p> <p>1.2 ลักษณะของกิจกรรมที่จัด</p> <p><input type="checkbox"/> ออกหน่วยอนามัย <input type="checkbox"/> อบรมความรู้ในพื้นที่ <input type="checkbox"/> จัดนิทรรศการ <input type="checkbox"/> เสี่ยงตามสาย</p> <p><input type="checkbox"/> แจกแผ่นพับรณรงค์ <input type="checkbox"/> ทำสื่อวิดีโอ <input type="checkbox"/> ทำสื่อออนไลน์ <input type="checkbox"/> เขียนบทความวิชาการ</p> <p><input type="checkbox"/> เผยแพร่โปสเตอร์ให้ความรู้ <input type="checkbox"/> อื่นๆ โปรดระบุ.....</p>	
<p>2. กิจกรรมต่าง ๆ ที่ท่านจัดหรือดำเนินการให้ความสำคัญกับประเด็นเนื้อหาเหล่านี้ มากน้อยเพียงใด (5=ให้ความสำคัญมากที่สุด, 0=ไม่ให้ความสำคัญ)</p> <p>2.1 ประเด็นด้านความรู้ (Knowledge)</p> <p>2.1.1 การใช้ยาฆ่าเชื้อ/ยาปฏิชีวนะโดยไม่จำเป็น ทำให้การรักษาไม่ได้ผลหรือเกิดเชื้อดื้อยา</p> <p style="text-align: center;"><input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0</p> <p>2.1.2 ควรหยุดใช้ยาฆ่าเชื้อ/ยาปฏิชีวนะเมื่อรับประทานครบถ้วนตามที่แพทย์/บุคลากรทางการแพทย์แนะนำ</p> <p style="text-align: center;"><input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0</p> <p>2.1.3 การได้รับยาฆ่าเชื้อ/ยาปฏิชีวนะบ่อยครั้งก่อให้เกิดผลข้างเคียงที่ไม่พึงประสงค์ เช่น ท้องเสีย ฯลฯ</p> <p style="text-align: center;"><input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0</p> <p>2.1.4 ยาฆ่าเชื้อ/ยาปฏิชีวนะกับยาแก้อักเสบไม่ใช่ยาชนิดเดียวกัน</p> <p style="text-align: center;"><input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0</p> <p>2.1.5 ยาฆ่าเชื้อ/ยาปฏิชีวนะไม่สามารถรักษาไข้หวัดได้</p> <p style="text-align: center;"><input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0</p> <p>2.1.6 ยาฆ่าเชื้อ/ยาปฏิชีวนะไม่สามารถฆ่าเชื้อไวรัสได้</p> <p style="text-align: center;"><input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0</p>	

<p>2.2 ประเด็นด้านความตระหนักรู้ (Awareness)</p> <p>2.2.1 ควรใช้ยาฆ่าเชื้อ/ยาปฏิชีวนะที่แพทย์หรือบุคลากรทางแพทย์สั่งให้เท่านั้น</p> <p><input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0</p> <p>2.2.2 ไม่ควรเก็บยาฆ่าเชื้อ/ยาปฏิชีวนะที่เหลือ เพื่อใช้ในการเจ็บป่วยครั้งต่อไป</p> <p><input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0</p> <p>2.2.3 ถ้าได้รับยาฆ่าเชื้อ/ยาปฏิชีวนะโดยไม่จำเป็นจะทำให้เกิดเชื้อ ดื้อยาได้</p> <p><input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0</p> <p>2.2.4 เชื้อดื้อยาเป็นปัญหาที่ทุกคนควรให้ความสำคัญ</p> <p><input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0</p> <p>2.2.5 เชื้อดื้อยาจะส่งผลกระทบต่อสุขภาพต่อตนเองและคนในครอบครัว</p> <p><input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0</p> <p>2.2.6 การใช้ยาฆ่าเชื้อ/ยาปฏิชีวนะอย่างถูกต้องจะช่วยให้ลดความเสี่ยงที่จะได้รับเชื้อดื้อยา</p> <p><input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0</p>	
<p>3. สื่อ, ช่องทาง หรือรูปแบบที่ท่านใช้ในการเผยแพร่ความรู้เกี่ยวกับเชื้อดื้อยาและการใช้ยาต้านจุลชีพที่เหมาะสม มีอะไรบ้าง? (ตอบได้มากกว่า 1 ข้อ)</p>	<p><input type="checkbox"/> แผ่นพับรณรงค์</p> <p><input type="checkbox"/> สื่อวิดีโอ</p> <p><input type="checkbox"/> Spot โฆษณาทางวิทยุ</p> <p><input type="checkbox"/> สื่อออนไลน์ เช่น Facebook Page, Twitter, อื่น ๆ</p> <p><input type="checkbox"/> เสียงตามสาย</p> <p><input type="checkbox"/> บทความทางวิชาการ</p> <p><input type="checkbox"/> โปสเตอร์ให้ความรู้</p> <p><input type="checkbox"/> อื่นๆ ระบุ.....</p>
<p>4. ท่านจัดกิจกรรมบ่อยเพียงใด</p>	<p><input type="checkbox"/> ทุกเดือน</p> <p><input type="checkbox"/> ทุก 3 เดือน</p> <p><input type="checkbox"/> ทุก 6 เดือน</p> <p><input type="checkbox"/> ปีละครั้ง</p> <p><input type="checkbox"/> อื่นๆ ระบุ.....</p>

<p>5. กลุ่มเป้าหมายคือ กลุ่มใด (ตอบได้มากกว่า 1 ข้อ)</p>	<p><input type="checkbox"/> ผู้ป่วย</p> <p><input type="checkbox"/> ผู้สูงอายุ</p> <p><input type="checkbox"/> ประชาชนวัยทำงาน</p> <p><input type="checkbox"/> ประชาชนวัยรุ่น</p> <p><input type="checkbox"/> บุคลากรสาธารณสุข</p> <p><input type="checkbox"/> อสม./อสส.</p> <p><input type="checkbox"/> นักเรียน/นักศึกษา</p> <p><input type="checkbox"/> พระ/ผู้นำศาสนา</p> <p><input type="checkbox"/> ผู้นำชุมชน</p> <p><input type="checkbox"/> อื่น ๆ ระบุ</p> <p>.....</p>
<p>6. กิจกรรมที่ท่านจัดครอบคลุมพื้นที่ในจังหวัดท่านร้อยละเท่าไร (โดยประมาณ)</p>	<p>.....</p>

APPENDIX III
Phase II interview guide



แบบสัมภาษณ์เชิงลึก

แบบสัมภาษณ์เชิงลึกสำหรับเภสัชกรสำนักงานสาธารณสุขจังหวัด, เภสัชกรและนักวิชาการ
สาธารณสุขประจำโรงพยาบาลหรือศูนย์บริการสาธารณสุขกรุงเทพมหานคร และอาสาสมัคร
สาธารณสุขประจำหมู่บ้าน

ส่วนที่ 1 ประวัติส่วนตัว และประวัติการทำงานอย่างย่อ ของผู้ถูกสัมภาษณ์

1. รหัสกำกับ PH... HP... หรือ VHV...
2. เพศ
3. อายุ
4. สถานที่ทำงาน
5. ตำแหน่ง
6. ประสบการณ์การทำงานเกี่ยวกับการส่งเสริมความรู้เรื่องเชื้อดื้อยาและความตระหนักด้าน
การใช้ยาต้านจุลชีพอย่างเหมาะสมแก่ประชาชน

ส่วนที่ 2 คำถามเกี่ยวกับผลผลิตการดำเนินงานตามยุทธศาสตร์ที่ 5 การส่งเสริมความรู้ด้านเชื้อดื้อยา
และความตระหนักด้านการใช้ยาต้านจุลชีพอย่างเหมาะสมแก่ประชาชน

1. ช่วงปี 2560-2564 มีการจัดกิจกรรมรณรงค์ให้ความรู้ประชาชนเกี่ยวกับเรื่องเชื้อดื้อยา และ
การใช้ยาปฏิชีวนะที่สมเหตุผล อะไรบ้าง ลักษณะกิจกรรมเป็นอย่างไร ดำเนินกิจกรรม
อย่างไร ขั้นตอนเป็นอย่างไร จัดกิจกรรมช่วงไหน ความถี่ในการจัดกิจกรรมเป็นกี่ครั้ง
กลุ่มเป้าหมายคือใคร ทำไมเลือกกลุ่มเป้าหมายกลุ่มนี้
2. การจัดกิจกรรมแต่ละครั้ง ท่านได้มีการจัดกิจกรรมประเมินผลหรือไม่ ผลที่ได้เป็นอย่างไร
3. ท่านมีการส่งเสริมบทบาทขององค์กรและเครือข่ายภาคประชาสังคม สื่อมวลชนในการสร้าง
ความเข้าใจเรื่องเชื้อดื้อยาและการใช้ยาต้านจุลชีพอย่างเหมาะสมหรือไม่ อย่างไร
4. ท่านมีการเสริมสร้าง ความเข้มแข็งและการมีส่วนร่วมของชุมชนและภาคีเครือข่าย หรือไม่
อย่างไร

ส่วนที่ 3 ปัจจัยที่ส่งผลต่อการดำเนินกิจกรรมตามยุทธ์ 5 (ตัวอย่างข้อคำถาม)

1. ปัจจัยด้านนโยบาย

- ท่านคิดว่านโยบายยุทธ 5 เรื่องการสร้างความรู้และความตระหนักรู้เกี่ยวกับเรื่องเชื้อดื้อยาและการใช้ยาต้านจุลชีพสามารถแก้ปัญหาเชื้อดื้อยา และเหมาะสมกับบริบทในพื้นที่ของท่านหรือไม่ อย่างไร
 - การดำเนินงานตามนโยบายยุทธ 5 เป็นไปตามพันธกิจ สอดคล้องกับหน้าที่และความรับผิดชอบของหน่วยงานท่านหรือไม่ อย่างไร
2. ปัจจัยด้านการสื่อสาร และการประสานงาน
- การประสานงานระหว่างองค์กรของท่าน (สสจ.,รพช. หรือรพ.สต.) กับ หน่วยงานท้องถิ่นในการดำเนินกิจกรรมตามยุทธ 5 เป็นอย่างไร
 - การสื่อสารระหว่างผู้ปฏิบัติงานตามนโยบายยุทธ 5 ในองค์กรของคุณเป็นอย่างไร
3. ปัจจัยด้านทรัพยากร
- เงินทุนเพื่อสนับสนุนการดำเนินงานตามยุทธ 5 ของหน่วยงานคุณเพียงพอหรือไม่ อย่างไร
 - ความพร้อมด้านวัสดุอุปกรณ์ รวมถึงชุดข้อมูลในการดำเนินงานตามยุทธ 5 เพียงพอหรือไม่อย่างไร
4. ปัจจัยด้านสิ่งแวดล้อม
- ท่านคิดว่าผลกระทบจากสภาพสังคม เศรษฐกิจ และการเมืองต่อการดำเนินงานตามยุทธ 5 ในพื้นที่เป็นอย่างไร
 - การสนับสนุนทางการเมือง เช่น พรรคการเมือง,อบต. หรือ อปท. รวมถึงความสนใจของสื่อมวลชน ในการดำเนินงานตามยุทธ 5 ในพื้นที่เป็นอย่างไร
5. ปัจจัยด้านผู้บริหาร
- ผู้บริหารในหน่วยงานของท่าน (นายแพทย์ สสจ., ผู้อำนวยการโรงพยาบาล เป็นต้น) สนับสนุนหรือส่งเสริมในการดำเนินงานตามนโยบายยุทธ 5 หรือไม่ อย่างไร
 - ผู้บริหารในหน่วยงานของท่าน มีความสามารถในการสร้างแรงจูงใจให้ผู้ปฏิบัติงานดำเนินงานตามยุทธ5 อย่างไร
6. ปัจจัยด้านบุคลากร
- จำนวนบุคลากรผู้ปฏิบัติตามนโยบายยุทธ 5 ของหน่วยงานท่านเพียงพอหรือไม่อย่างไร
 - ศักยภาพของบุคลากรในหน่วยงานท่าน ที่ดำเนินตามยุทธศาสตร์ที่ 5 เช่น ทักษะการดำเนินงาน ความรู้ ความสามารถ การทำงานเป็นทีม เป็นอย่างไร
7. ปัจจัยด้านกลุ่มเป้าหมาย

- ความร่วมมือและการสนับสนุนของกลุ่มเป้าหมายในพื้นที่ท่านต่อกิจกรรมตามนโยบาย ยุทธ 5 ที่ท่านจัดเป็นอย่างไร
- 8. ปัจจัยด้านการประชาสัมพันธ์
 - ท่านมีรูปแบบการประชาสัมพันธ์กิจกรรมตามยุทธ 5 ที่หน่วยงานท่าน อย่างไร
- 9. ปัจจัยอื่น ๆ
 - ท่านคิดว่ามีปัจจัยอื่น ๆ ที่ส่งผลกระทบต่อการทำงานตามยุทธ 5 ในพื้นที่หรือไม่ อย่างไร



VITA

NAME SHINNAWAT SAENGUNGSUMALEE

DATE OF BIRTH 29 December 1991

PLACE OF BIRTH Bangkok

INSTITUTIONS ATTENDED 2017 - Doctor of Pharmacy, Faculty of Pharmacy, Rangsit University
2019 - B.A. (History), Faculty of Humanities, Ramkhamhaeng University
2022 - LLB., Faculty of Law, Thammasat University

HOME ADDRESS 246 Soi Charoenkrung 57 Charoenkrung Road
Yannawa Sathorn
Bangkok 10120

PUBLICATION เพ็ญศรี ทองนพเนื่อ, สวาท กุลมา, จูฑารีย์ ชีรชยานันท์ และ ชินวัจน์ แสงอังคุมาลี. การพัฒนาสื่อการสอนอิเล็กทรอนิกส์เรื่อง เทคนิคการวิเคราะห์ยาแบบไทเทรชัน. วารสารพัฒนาการเรียนการสอน มหาวิทยาลัยรังสิต ปีที่ : 11 ฉบับที่ : 1 เลขหน้า : 72-81 ปีพ.ศ. : 2560
กมลวรรณ ตันติพิวัฒนสกุล, อรปรีชา สักดาพิสุทธิ์, นิชกานต์ ศิลประเสริฐ, ปทุมพร เทพกัน, เฉลิมศักดิ์ กิตติตระกูล และ ชินวัจน์ แสงอังคุมาลี. (2565). สถานการณ์และปัญหาการเข้าถึงยาเบดาคาควิลินในผู้ป่วยวัณโรคดื้อยา. วารสารสาธารณสุขและสุขภาพศึกษา, 2(2), 10-23.
กมลวรรณ ตันติพิวัฒนสกุล, ชวิน อุ่นภัทร, ปรุพพ์ รุจนธำรงค์, ชลธิชา สลักศิลป์, สุภาพิชญ์ ศิริมงคล, กนกวรรณ แยมหงษ์ และ ชินวัจน์ แสงอังคุมาลี. (2565). การปฏิบัติตามกฎหมายคุ้มครองข้อมูลส่วนบุคคลในการให้บริการเภสัชกรรมทางไกล: การวิจัยเชิงคุณภาพ. วารสารกฎหมายและนโยบายสาธารณสุข, 8(3), 495-507.
Kamolwan Tantipiwattanaskul, Suyanee Pongthananikorn, Thunpitcha Pimpong, Wilasinee Nutprakong, Teerapath Pattoom, Shinnawat Saengungsumalee. (2566). Survey of Hospital Pharmacists' Opinions on Current Situation of Unused Medication Problem. Journal of Arts Management, 7(2).