

A strategy for the Thai Department of Disease Control for use in internal communication in situations such as the MERS, H5N1 and influenza crises

Major Research Paper

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Abstract

In a pandemic crisis, fast actions save lives, thus sense making and internal communication are the most critical elements of teamwork needed to give direction to those actions. This study attempts to find out how an agency tasked with handling outbreaks of infectious diseases, namely the Thai Department of Disease Control (DDC), a department of the Thai Ministry of Public Health, actually handles pandemic crises, with an eye to discovering what the DDC does right, and possibly uncovering what might be improved.

This study contextualizes, and analyzes interviews with members of the DDC team who worked during the H5N1 (2004-2006), influenza (2008-2009) and MERS-CoV (2015-2016) pandemic incidents, because these pandemic cases produced effects both internal and external. The researcher has consulted many theorists, such as Karl E Weick, David F. Haas and more, to analyze data that was collected. This case study illustrated potential factors that could interfere with team communication in the DDC during a crisis, delved into some of the causes of these factors, and made some suggestions for changes to the DDC's internal communication strategies during a crisis, which may be of use to similar organizations in similar situations as well.

Lors d'une crise pandémique, les réactions rapides sauvent des vies. De ce fait, le bon sens et la communication interne sont des éléments essentiels du travail d'équipe qui sont nécessaires pour guider ces réactions. Cette étude tente de trouver comment une agence ayant l'objectif de réagir face aux apparitions d'épidémies, plus précisément le Thai Department of Disease Control (DDC) - le Département Thaï de prévention de maladies - un département du Thai Ministry of Public Health - le Ministère Thaï de la santé publique - gère effectivement une crise pandémique, en observant ce que le DDC effectue correctement et révélant peut-être ce qui pourrait être amélioré.

Cette étude contextualise et analyse des entrevues avec des membres de l'équipe de DDC qui ont travaillé durant les accidents pandémiques du virus de la grippe aviaire (2004-2006), du virus H5N1 (2008-2009) et du coronavirus du syndrome respiratoire du Moyen-Orient (MERS-CoV, 2015-2016), puisque ces deux cas ont causé des effets internes et externes. Le chercheur en tête a consulté plusieurs experts, dont Karl E. Weick, David F. Haas, et plusieurs autres afin d'analyser les données collectées. Cette étude de cas a pu illustrer des facteurs potentiels qui pourraient interférer avec la communication d'équipe du DDC lors d'une crise, a analysé les différentes causes de ces facteurs et a proposé des suggestions pour des changements aux stratégies de communication interne du DDC lors d'une crise; Ces suggestions pourraient être utiles pour des organisations similaires lors de situations de crise similaires.

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Introduction

There are always pandemic crises around the world, affecting people in affected regions considerably and the people in organizations tasked with handling these pandemics as well. For instance, the form of avian influenza known as the H5N1 virus was discovered in poultry and humans in Thailand in January 2004, dragging on until 2005, and creating losses (17 reported human cases with 12 deaths as of 2005 – see the World Health organization’s “Emergencies preparedness, response page” at http://www.who.int/csr/don/2005_05_19/en/) and fear, not only among citizens, but among health care unit workers as well (Tiensin et al, 2005). By contrast, there were only three confirmed patients who were infected by MERS in Thailand (Plipat et al, 2017).

This study focuses on the crisis communication system in use by a government organization involved in this field, how it actually works, what flaws might exist, and, if so, what previous research suggests about how to fix them.

Does the organization’s communication work effectively in a crisis? There are indications that the system we investigated has not functioned in the past as well as it might, e.g. panic both internal and external during the Ebola pandemic (Participant P.9 stated that “*No other disease caused as much confusion as Ebola. We were prepared, but not at 100% readiness. Our work often came to a standstill because we experienced an unclear sense of the data. 100% of our personnel were in terror,*” despite the fact that, as in Canada, there was zero incidence of the disease), delays in communicating with the field during Zika outbreaks (private conversations with the organization’s project lead and communication lead in preparation for the research, 2017). We chose to study specifically the responses to the (relatively) recent MERS (2015-2016), H5N1 (2003-2006) and influenza (H1N1 and H3N2 – 2008-2009) pandemics to see if this organization has met with problems in its internal communication during these outbreaks, or, perhaps, found useful solutions that either arose from previous crises or in reaction to the cases under study. These pandemics were chosen to view the operations at the DDC since the 2003 SARS pandemic. Purely coordinating bodies of the DDC’s sort are not uncommon in other nations’ public services (e.g., the CDC in the USA), so it is entirely possible that the study may be of more general use than to this one country alone.

This study made use of qualitative methods to investigate these questions, primarily through the use of structured interviews with participants chosen from throughout the organization, and through analysis of primary documents regarding these pandemics. Subsequent sections of this paper will undertake a review of the literature on crisis communication, outline the goals of the study and its methodology, review and discuss the findings of the study, and come to conclusions with indications for further study.

1. Literature review

The point of this literature review is to discuss the possible challenges to internal communication during incidents of uncertainty, as presented in the works of several authors, and to find clues as to exactly what problems of internal communication may exist in the organization under study. There are several problems that may appear in internal communication during an emergency:

1.1 Human perception vs the influence of leadership and a hierarchical system

Referencing Craig Duhamel's research presented in "Using Lessons from SARS in Tackling Swine Flu: Looking Inward to Develop a Crisis Communication Model" (2009), we will look at the problems that attended the SARS outbreak at Sunnybrook Health Sciences Centre in Toronto, a leading medical school and research center with more than 1 million patient visits each year. Even though spokespeople from the Centre's communication department tried their best to keep the staff informed to the extent that they could, the uncertainty of workers, patients, friends, family members about their safety during the SARS outbreak increased after fatalities in the staff drew public attention. Duhamel points out the first barrier to internal communication is information overload, i.e., too many sources, both internal and external, of information of varying accuracy to process.

According to Duhamel, it is important in a crisis is to know the source of the information, and whether the source is consistent and accurate. In Sunnybrook, a "war room", or a team of leaders from across the organization, representing various professions and job functions in the hospital, would meet daily for about an hour or two to discuss and resolve issues related to the outbreak. After the issues had been confirmed, the information would be broadcast via email, voice mail,

etc. to entire organization, with follow-ups from either the CEO or the public affairs department, plus unit-level communication tailored to the units from managers and supervisors, and the communication was **symmetrical**: staff were encouraged to ask questions and provide feedback. As a result, broadcast communication impacted staff and hospital leadership on two fronts, as it could be reaffirmed at departmental level, providing an additional sense of stability in a chaotic environment.

From this context, what we can see of how internal communication was handled suggests that Sunnybrook Health Science Center made use of a functionalist approach to communication and hierarchical organization to communicate with their workers. Grosjean and Bonneville, as cited in Grosjean & Bonneville, (2011, p. 47), point out that, in this approach, texts passed through organization, for instance, regardless of kind (bulletin, report, letter, etc.), exist above all else as vehicles of communication conveying ideas, reflections, rules, directives, etc. (*“sont avant tout des véhicules d’informations, celles-ci pouvant être de l’ordre d’idées, de réflexions, de normes à respecter, de lignes directrices, etc.”*). This communication approach sees communication as a management tool to realize the goals and/or purposes of the organization. Communication is seen as tangible, travelling up, down and sideways – messages are seen as having a physical form in time and space quite independent of the emitter and receiver (Laramée as cited in Grosjean & Bonneville, 2011, p. 48). *The context of the message is seen as irrelevant.* Bonneville and Grosjean go on to outline the cybernetic model of communication, with the message as a signal from emitter to receiver through a channel that may be subject to noise (a variety of obstacles to communication), with a possibility of feedback from receiver to emitter to improve the intelligibility of the message. Duhamel’s description fits that model fairly well.

His model also fits well with the research of Men and Stacks into authentic leadership (essentially defined as leadership according to an internalized system of values) as an antecedent factor playing a critical role in nurturing an organization’s symmetrical and transparent communication system, which in turn, cultivates quality employee–organization relationships (Men & Stacks, 2014). Walumbwa, Avolio, Gardner, Wernsing and Peterson, as cited in Men (2014), state that the construct of authentic leadership was developed given a recent “upswing in highly publicized corporate scandals, management malfeasance, and broader societal challenges facing public and private organizations.”

Duhamel proposed a model based on his findings, a tiered two-way dissemination of information with the tone set by top management. In this model, information is gathered, evaluated and broadcast from a war room to line managers, and from there to staff, allowing the message to be adapted to the requirements of each line unit. He further proposed that feedback mechanisms be set up for all methods of information dissemination to allow management to see how well they are getting across the message, and to allow them to find the compromises needed to make the message palatable.

1.2 Expectations vs sense making; habit vs situational awareness

When thinking about teamwork and decision making, the case that presented clearly to us the conflict between human sense making and human instinct is the classic research from Weick's "Collapse of Sensemaking in Organizations: The Mann Gulch Disaster", Chapter 4 of his book *Making Sense of the Organization* (2001), that was about Wag Dodge, Ranger Jim Harrison and thirteen smokejumpers, who were flown in to fight a wildfire in Mann Gulch National Park. Because of a communication breakdown due to differing attitudes and personal instincts within the team, most of the firefighters were killed in this incident. Only Dodge, who lay in the ashes of a what might be called a sacrificial fire (i.e., creating a fire on unburnt ground to deprive the oncoming wildfire of fuel in that area) that he started when it became evident that the wildfire was catching up to the team, Sallee and Rumsey, who found a crevice that allowed them to escape from the path of the fire, and a smokejumper, who developed airsickness en route due to bad turbulence and returned to base, survived. Weick saw the breakdown in organization as less a problem of decision making than a breakdown of sense-making. The team had assumed a controllable fire, and that belief persisted despite evidence to the contrary. When that belief was no longer tenable, the team found itself in unknown territory. When the leader of the team (a simple organization with a leader, second-in-charge and workers) spotted that the fire had jumped the gulch and had the team move at a diagonal uphill *away from the river*, ordered them to drop their tools, lit a fire and ordered them to lie in its ashes, the smokejumpers lost a sense of their roles, resulting in a loss in organization and every man for himself. To us, this suggests the question, to what extent do human expectations, the enactments of people in a team, and failures of sense making cause problems in a given real life crisis situation? It is certain that the Mann Gulch catastrophe embodies a worst-case scenario of these problems.

Also relevant, Chapter 5, “The Vulnerable System: an Analysis of the Tenerife Air Disaster”, is about the situation in 1977 involving a KLM 747 flying from Amsterdam to Las Palmas, and a Pan-Am 747 from New York to Las Palmas that was diverted to Tenerife due to a terrorist bombing at Las Palmas. Because Tenerife was not a major airport, it had limited taxi space for the two large planes, and the Pan-Am flight was obliged to park behind the KLM flight, and was not able to take off before the KLM flight. Tenerife traffic control was obliged to taxi the KLM flight down the runway, where it made a 180° turn at the end to await takeoff. The Pan-Am flight was then to start taxiing down the runway, and turn off at the last taxiway to continue down the parallel runway and come up behind the KLM flight. Complicating matters was that the airport lacked ground radar, centerline lights on the runway, and was at high enough an elevation that visibility in the middle of the runway was poor due to clouds. While the Pan-Am flight was still taxiing up the runway, the KLM started its takeoff without authorization. The two planes crashed around the middle of runway, causing a fire and great loss of life.

These two cases illustrate human reactions, and affirmed to us that “humans like us are not always reasonable” whenever decision making runs up against pressure and fear. The Tenerife Air Disaster was caused in part by the fact that the KLM crew was starting to run up against a Dutch legal limit to the amount of duty time a crew was allowed to perform in a month. This law had real consequences for a crew found to be in infraction, in the form of fines, imprisonment and loss of license, hence the crew was under considerable pressure to complete their route. Similarly, the traffic controllers were under stress from the arrival of planes their airport was not really meant to handle, disrupting their routines because there was no good place to park the planes according to those routines. Weick notes that, when stress starts to affect judgement, reversion to previously overlearned habits can occur.

To paraphrase Weick’s account of the disaster (2001), the KLM pilot was a manager and the chief trainer of the airline who had not flown routes for some time. In training simulations, the trainer clears takeoffs, and that was precisely what he did. It is possible that air traffic control’s English suffered from a similar reversion, making communication less clear than it could have been. The Pan-Am pilot wanted to remain off the active runway, but was possibly misunderstood by the controller: rather than make an issue of it, the pilot reverted to the habit of compliance. In the lead up to the disaster, the KLM pilot seemed somewhat disconnected from the

communications around him. When the first officer reminded him that they had not yet received clearance, he asked the first officer to request it, but started takeoff anyway. The first officer then added the ambiguous statement that “We are now at takeoff” to his radio message to tower. This was taken as readiness by both the tower and the Pan-Am pilot. According to Weick, the controller replied, “Okay, stand by for takeoff... I will call you.” The Pan-Am pilot noted that he was still taxiing down the runway and would confirm when he cleared the runway. The KLM flight engineer noticed this radio message and asked his captain, “Is he not clear yet?” to which the KLM pilot replied “Yes.” The crash took place seconds later.

The KLM case is interesting in that catastrophe can proceed by small steps, i.e., “From little piles are big piles made.” In each of these little steps to disaster at Tenerife, all of the actors were under pressure and reverted to previous overlearned routines, quite possibly as a result of that pressure. Even the KLM first officer, who should have very sharply questioned the pilot’s decision, fell back to the previous behavior of softening his language and deferring to the captain – he, after all, had just graduated from training shortly before the disaster.

1.3 Interchangeable team members and set roles vs expertise, delegation and interchangeable roles

One of the notable aspects of the cases that Weick presented was that the various teams involved in both were temporary in nature, with the membership for a specific mission defined by the roles to be filled. The young smokejumpers were not part of a permanent team, but assigned out of a pool of smokejumpers tasked with putting out small brush fires, which was what the Mann Gulch fire was expected to be. With the exception of the older, more experienced Wag Dodge, they were inexperienced with the kind of wildfire they encountered in Mann Gulch, and ill-prepared to deal with it. Similarly, the Tenerife disaster came about because temporary teams filling specific roles with interchangeable members came up against a situation that was beyond their experience – aircrews dealing with an airport ill-suited for jumbo jets; flight controllers dealing with jumbo jets ill-suited for their small airport.

Weick’s corpus of work, of course, is based on the futility of expecting organizational permanence and complete coverage of contingencies through planning, infrastructure, etc. –

Making Sense of the Organization (2000) and *Making Sense of the Organization: The*

Impermanent Organization (2009) both stress the act of organizing as an emergent **unpredictable** order in the face of impermanence, incomplete information and ambiguity. This is a recognition that not all circumstances are rooted within a person's or organization's agency.

One will note that the ambiguity about which Weick writes is a very normal state of affairs during a pandemic: there will be questions about whether cases in the field exhibit the constellation of symptoms associated with a given infection, where the disease has appeared, what vectors are associated, to what extent has the disease been reported (or under-reported, as the case may be), etc. In his online article for CIDRAP, "The Fog of Pandemic Planning" (2007), Michael T. Osterholm, describes influenza pandemics in terms of "fog of war":

"The "fog of war" describes the level of ambiguity in situational awareness experienced by participants in military operations. The term captures the uncertainty regarding one's own capability and the capability and intent of the adversary during battle. The conceptual similarities between the fog of war and the fog of pandemic preparedness are unmistakable:

- We really don't understand our capability as a nation or international community to respond.
- We have only a very general sense of what the pandemic influenza virus is capable of doing in terms of human illness or the social, political, and economic collateral damage.
- We can't predict with any certainty how the next pandemic virus will behave in humans and animals."

Taking this a bit farther in the context of crisis communication is "Introducing a Fragmentation Perspective on Coordination in Crisis Management" (Wolbers, Biersma & Groenewegen, 2017).

The authors start by noting that coordination is a key concept in management theory, which usually involves integrating a multitude of differentiated activities into a unified arrangement, seen as an emergent process synchronizing interdependent action trajectories. However, in turbulent, ambiguous situations that require the fast synchronization of multiple event trajectories, especially those involving fast reaction teams, the involved actors need to adapt quickly. When they come from a single organization, team members can adapt using role

switching, plug-and-play teaming or bricolage – they share a common culture that forms a framework for these tactics. When, however, a number of different organizations must work together to deal with a complex, fast-moving situation, the shared understanding that makes these tactics feasible is missing, and plans tend to break down, challenging the established lines of authority and creating discontinuity and ambiguity. In such a situation, sense-making becomes very difficult, and attempting to integrate activities becomes ineffective. The authors do refer to Weick's studies on the Mann Gulch disaster and the Tenerife airport disaster of 1977 (Weick, 2001) in this regard, as shall we when it comes time to define terms in a later section.

Wolbers et al (2017) came to the conclusion that discontinuity and ambiguity are the normal state of affairs in planning, with coordination arising as an emergent phenomenon. In complex crisis situations, actors came to adopt three strategies to deal with these problems: working around set procedures, when the formal procedures and guidelines fail to fit the situation; delegating tasks to allow those in charge in the field a chance to gain situational awareness and an overview of the situation; and demarcating expertise, i.e., letting go of one's authority to allow those with a specific expertise to take charge of specific tasks. There is something of these procedures in Duhamel's "war room" as described above, with its ad hoc membership drawn across disciplinary boundaries.

1.4 Cultural factors and their effect on organizational culture

David F. Haas gathered together a background of data regarding Thai culture, history, geography and politics to work with in his book, *Interaction in the Thai Bureaucracy: Structure, Culture, And Social Exchange* (1979). He illustrates the strong hierarchical system in Thailand that took root within Thai officialdom and bureaucracy a long time ago and flourishes even now, in contrast to Thai society, which has a loose social structure, especially in rural areas and villages (Dieter-Evers as cited on p.15). There is an exception to this looseness: Thai peasant social life is tightly organized through the relationship between juniors and seniors. Great respect is paid by young people to their seniors, and benefits are frequently obtained by means of a sort of patronage system in which juniors give deference and obedience in exchange for help and protection (p.15).

Citing Siffin, Haas (p.65) states that the Thai orientation is not technical but paternalistic, and that the administrative tradition is one in which power is closely held by officials at the center, because the center has control their sources of power: 1) control of scarce resources (money and time); 2) control of the flow of information; and 3) the ability to deal with uncertainty in the environment. The control of scarce resources is an important base of power in Thai organizations, particularly for officials at the district level (P.95). Control of the flow of information is also important; organizational obstacles to upward flow of information have been amply documented. (Hall, 1972; Dalton, 1959, both cited in Haas, 1979). Also, “Great respect is paid to rank in Thai society, and any villager can tell the difference between a high ranking official and a clerk. Moreover, a high official enjoys not only the respect of citizenry, but also that of his subordinates in civil service. The respect of official subordinates is probably more rewarding than the respect of citizens. For other officials constitute a civil servant’s reference group. Their respect and deference are important in defining his self-concept, and the status hierarchy most salient to him is that of the civil service, because people are likely to be most helpful to whoever they think has the most power because they hope to receive favors in return” (p. 65).

Due to the fact that in Thai civil service agencies, the main source of uncertainty comes from difficulties in obtaining resources to carry out the agency’s programs and to reward subordinates, an official who, through his relations with highly placed person in the central administration of his ministry in Bangkok, or through his relations with citizens, is able to procure resources is powerful in his relations with other officials.

Haas’ work dates back nearly 40 years, but not that much has changed in the interim. Nattavud Pimpa’s study on organizational culture in the Thai civil service (Pimpa, 2012) finds that:

“The aspect of collectivism among Thai public sector officers is clearly supported among older generation in this study. This study, however, confirms that the younger generation in the Thai public system is as collectivistic as what reported in Hofstede’s work in 1980s. The results from this study reveal that public sector officers tend to be collectivist in their early years and then be more individualistic after spending more time in the public sector system. This can be explained by the nature of Thai public sector organization where new staff needs to rely upon the support of the leader (Tan or ทนาย).

In most Thai public sector organizations, the leadership of ‘Tan’ is very strong among old generation. When one serves in the system for a long period of time and gain a strong status in the organization through the ranking and promotional system, one will become ‘Tan’ whom everyone, particular new staff, will succumb to his/her power. It can be difficult for young staff to be outstanding and outspoken at the early years without gaining a strong support from ‘Tan’.

The concept of power seems to be strong among Thai public officers. This can be inter-linked with the concept of ‘Tan’ in the Thai organization. Thai female public sector officers seem to accept the power of the boss more easily than their male colleagues. This point confirms that it is not a norm of practice in Thai public sector to challenge their superior (or the power in the organization). Superior who holds power and plays a crucial role in decision-making, strategic planning and implementation will be respected in the organization (Yeganeh & Su, 2007). When compare power dimension to other four cultural dimensions, it is confirmed that this aspect is still very strong in the Thai organization and will hardly change.” (p.40)

While Haas made a good point by linking the Thai hierarchy with politics and culture¹, the researcher also found that Patchanee Malikhao made a similar point in her book, *Culture and Communication in Thailand* (2017), linking Thai culture with the Buddhist religion and its system of governance, which is hierarchically based in Thailand (Page 16):

“For Thai culture, the worldview of Thais is comprised of patriarchy and a unique Buddhist worldview, which incorporates animistic, supernatural beliefs, and Brahmanism (Malikhao 2007: 63). Srichampa affirms that Thais have different beliefs (2014: 50–51): Buddhist beliefs, superstitious beliefs, sacred thing beliefs, deity beliefs, and astrological beliefs. For Buddhist beliefs, Srichampa (2014: 50) explains that these are about the triple

¹ One can find similar observations made by Western businesspeople dealing with Thai enterprises. The Naked Farang (*foreigner*) site has pages on “Thai Business Hierarchy” (<http://www.nakedfarang.com/working/businesshierarchy.php>) and “Graeng Jai in Business” (<http://www.nakedfarang.com/working/graengjaiinbusiness.php>). The latter deals with the absolute necessity of tact in dealings with people in the hierarchy.

gems (Buddha-Dhamma-Sangha), karma law (do good get good, do bad get bad), reincarnation, law of nature which consists of the Law of Kamma (action), the Law of Season (utu), the Law of Seed (Bija), the Law of Consciousness (Citta), the Law of Dhamma (States), and heaven and hell. For superstitious beliefs, Srichampa (2014: 51) explains that there are two types: magic beliefs—the beliefs of old scripts—and amulet beliefs. These can be called the popular Thai Buddhist beliefs” (p. 8-9).

1.5 Reputation (organizational image) and its effect on internal communication

Alessandra Mazzei has a pair of papers out as lead researcher dealing with internal communications during a crisis: *Internal Crisis Communication Strategies to Protect Trust Relationships: A Study of Italian Companies* (Mazzei & Ravazzani, 2014); and *Strategic Value of Employee Relationships and Communicative Actions: Overcoming Corporate Crisis with Quality Internal Communication* (Mazzei, Kim & Dell’Oro, 2012). These papers are centered on corporate crises and communication, as the titles indicate, and thus tend to focus on the maintenance of reputation. This is not to say that reputation is not a consideration in the public sector, but that such consideration is trumped by the need to limit the physical threat to the public, and is of most concern to the extent that damage to the organization’s reputation impedes these efforts.

Mazzei’s papers deal primarily with the effects of internal communication on reputation, but reputation can hinge on the *trustworthiness of informational sources*, and, as anyone who has had to work in an organization and deal with management announcements knows, this can have as great an effect internally as externally (e.g., are the personnel pulling together in a crisis situation, or are they readying their CVs?). Indeed, the explicit goal of these papers was to establish that good internal communication practices are important in maintaining the company’s reputation internally to ensure that the organization’s personnel are indeed pulling together. Both papers acknowledge that employees are *emitters* of information as well as recipients.

In the former paper, Mazzei and Ravazzani create a model for charting internal crisis communication, plotting objectives on the horizontal axis (cognitive to affective to behavioral, in order of increasing responsibility) against content on the vertical axis (informative to

identification to factual, again in order of increasing responsibility). A diagonal would show a progression from content that states the company's situation in a crisis with the goal of inducing a sense of security and realistic expectations in the employees, to content that stresses company values and culture to induce a sense of belonging and trust within the organization, to content and actions that are factual and face the crisis directly "to sustain employees' commitment in their roles and collaboration to overcome the crisis, thus activating behaviors" (Mazzei & Ravazzani, 2014, p. 323).

The authors block off two areas – at the top where content is informative and identification, but lacks the factual attribute, and on the right side, where the behavioral objective is lacking – as strategies of evasion and under-utilization respectively. They then plotted the responses of 135 communication managers to a survey on strategies employed during financial crisis of 2008. They found, perhaps unsurprisingly, that the majority of companies had pursued strategies of evasion or under-utilization.

The paper by Mazzei et al (2012) deals primarily with a successful case of dealing with a death in an industrial accident during a period when Italy was suffering a rash of industrial accidents, and Italian companies were coming under very heavy fire for neglect of safety. The long and short of the case was that the company in question had a history prior to the accident of not just "talking the talk", but of "walking the walk" when it came to industrial safety: they spent considerable money on safety equipment, infrastructure and training, and took responsibility for the accident by helping the victim's family and adding practical training for contract workers (the victim was one) on the equipment in addition to the classroom training they already received. This is what Mazzei and Ravazzani would call in their paper factual content in service of behavioral objectives (2014). The company was thus not subjected to criticism by its workforce or the press.

To some extent, these papers deal with reputation as a primary goal for the organization coping with a crisis. "Giving Voice to the Silenced: Using Critical Discourse Analysis to Inform Crisis Communication Theory" (Dunn & Eble, 2014) and "Beyond Image Repair: Suggestions for Crisis Communication Theory Development" (Liu & Fraustino, 2014) serve as a counterbalance. In the former, the authors give a case study on an explosion causing death at a pharmaceuticals plant in a small blue-collar American town through the lens of Critical Discourse Analysis. In

this particular case, the company involved managed to avoid repercussions to its standing in its community for the explosion despite a U.S. Chemical Safety and Hazard Investigation Board report that the company was ultimately at fault. Dunn & Eble examine the social background and power relations that led to this circumstance.

The latter (very brief) paper is an overview of crisis communication theories in light of modern social media. Liu & Fraustino point out that the majority of social media use during a crisis focuses on anything but image repair. They give a brief overview of various crisis communication theories and how they relate to social media, grouping them into image-making, complexity-understanding, and resilience generating categories, before offering directions for further research. They argue that it is necessary to investigate more deeply the roles of communication in preparation and response to crises, particularly in consideration of the capabilities of new media; that it is probably time to move away from a predominant focus on image and reputation management; that research should broaden its horizons from one organization/one crisis to “focus on how social media can facilitate multi-vocal crisis responses from organizations and publics” (p.545); and, again given the capabilities of new media, that research should broaden to cover cross-border responses to crises as well.

We would note that success in handling communication during the sorts of crises with which the DDC is tasked should not be primarily concerned with reputation (although it is **not** unimportant) – there are graver issues at stake during a pandemic. However, reputation *can be* tightly bound to the reputability of information sources within an organization, and, in this regard, there can have as direct an effect on internal communication as on external – there is overlap in the requirements the two environments dictate. Dunn & Eble’s paper serves as a reminder that internal reputation is not the *only* source of solidarity within a company during a crisis: employees may back a company, regardless of the circumstances, for want of better alternatives (*faute de mieux*). Internal communication is not entirely separable from the organization’s external environment. This is probably something that a researcher should bear in mind when evaluating data collected from an organization’s personnel.

We will be looking further at Weick’s seminal writings in a later section dealing with definitions and theoretical bases, as well as two papers by Nicole Giroux as lead author: “La communication

dans la mise en oeuvre du changement” (Giroux, 1998) and “Communication organisationnelle et stratégie” (Giroux & Demers, 1998).

2. Research problem statement

The literature suggests a number of problems in internal communication during crises, and a number of solutions to those problems. Duhamel (2009) suggests that information overload in the form of noise is a problem for both management and personnel during a crisis; Mazzei et al (2012) point out that personnel as emitters of information can exacerbate that problem for want of trustworthy alternatives. Weick points out that the unexpected and ambiguous can lead to a failure of sense making during a crisis (the Mann Gulch case in Weick, 2001), that actions (*enactments*) are needed to make sense of ambiguous situations (Weick, 1988 – this is covered more fully in Part 3), and that actions predicated on inappropriate assumptions and overlearned behaviors can lead in incremental steps to disaster (both the Mann Gulch and Tenerife cases in Weick, 2001). A number of papers (Duhamel, 2009; Men and Stacks, 2014; Mazzei et al, 2012) suggest a need for symmetrical communication during a crisis (although the term is not necessarily used by all). Weick (1988) points out the need for an understanding of how enactment interacts with sense making to enable the management of crises as a partitioning into small crises. Wolbers et al (2017) suggest fragmentation as a way for multi-organizational response teams to respond to the ambiguity of a crisis, by partitioning the problem into smaller tasks that can be handled concurrently on the basis of existing information, using workarounds, delegation and expertise demarcation to get around a lack of coordination. As mentioned previously, this has a fairly strong relationship to Duhamel’s war room (2009). We note that large organizations often act like multiple organizations due to their elaboration into divisions, departments, bureaus and offices. This would certainly be true of the organization we studied (see Fig. 2 in the Appendix).

2.1 Research Question

The primary question to be investigated was, what specific issues (i.e., specific to the organization’s function) does a governmental organization coordinating pandemic responses encounter in its internal communication during a crisis? This can be broken down into more specific questions:

1. What internal communication strategies has the organization implemented to deal with health crisis situations?
2. What are the possible problems (institutional, hierarchical or external) that might be constraining the internal communications of the organization, and how can these be dealt with?
3. What kinds of internal communication strategy may the organization use internally so as to facilitate an effective response to a crisis? What flaws in its current strategy may be working against this?

3. Conceptual / theoretical framework

In this section, we will mainly focus on the work of Karl E. Weick and Nicole Giroux as two primary theorists in this line of research. But before we start on the matter in depth, we must deal with the definitions of internal communication and crisis communication, communication planning, and the type of communication strategy.

3.1 The definition of internal communication, and its evolution

To begin with the definition of internal communication, there are several scholars who have given their own definitions and views of the role of the internal communication. According to Ana Tkalac Verčič, Dejan Verčič, and Krishnamurthy Sriramesh, in their article “Internal Communication: Definition, Parameters and the Future” (2012), “Internal communication is a part of the organizational communication function that is simultaneously managerial and technical”, which is related to corporate communication as defined by Asta Valackiene (2010), as a strategic management function focusing on current challenges: to create confidence in the internal and external audiences of the company as an active business forming a responsible corporate culture. On the other hand, internal communication, particularly symmetrical internal communication, is seen as critical to employee satisfaction within an organization, and hence to the organization’s productivity, by bringing the employees onboard in attaining the organization’s goals and needs (Men, 2014). Meanwhile, Mishra et al see internal communication (two-way communication between managers and employees) as critical to driving employee engagement, and see an increased role for public relations professionals in

strengthening internal communication (Mishra et al, 2014). A common thread is that these authors see internal communication as a way to advance an organization towards its goal. Alessandra Mazzei and Silvia Ravazzani see internal communication specifically as the key to success or failure in any major change or crisis situation (Mazzei & Ravazzani, 2014).

After we come to a basic understanding of internal communication, Nicole Giroux provides us with an explanation of the evolution of internal communication, with three different types of communication strategies which have changed over time. First, the functionalist approach is the model of handling information which focuses on the transmission of the message, leaving aside questions of meaning, in the macro-organizational aspect of the communication. In other words, this approach, which includes the relational human communication approach, avoids the problem of decoding the message, and ensures that communication functions as a controlled tool under the user's direction and works well in the organization. The purpose is to create a monolithic organization and social harmony internally (Giroux & Demers, 1998).

The second approach is the interpretative paradigm, a popular communication approach in the 70's, in many ways the opposite of the functionalist trend by attempting to use consensual and subjective meaning to make sense of people's experience in an organization. There is a tendency to minimize objectivity, unity and stability to emphasize subjectivity, dynamism, relativity and pluralism in defining the organization. This view of communication sees sense making as fundamental to creating the organization – actors and recipients actively interpret the meaning of information from both the message and its context. Although this method concentrates on the team working to make decisions together, it still has a tendency to focus on the representation of management roles (cognitivist approach) or shared meaning (cultural approach) due to its concentration on the results of processes. In addition to this representational bias, the interpretative approach can lose track of the organization by concentrating on lower level details – to lose the forest for the trees, so to speak. There can be a focus on leadership based on managing meaning. Giroux and Demers (1998) quote Neilsen and Rao: “The implicit message seems (to be) that organizational leaders have near complete control over the interpretive process and that they determine the limits to their control” (Neilsen & Rao, 1987). This bias arises from strategic studies privileging the actions of upper management.

In the 1980's, the critical paradigm arrived at a position of some influence, viewing the organization as an instrument of domination in service of the privileged class, and communication as a means of ideological manipulation (Giroux & Demers, 1998, p. 22). That is to say that the consensus rests on false premises that conceal the true state of affairs, meaning thus residing in the deep structure. The critical approach looks at how material advantage accrues to those with privileged access to information, communication channels, institutional structure and social practices, while ideology serves to legitimize this. It thus attempts to delineate the strategic process that directs and legitimizes the existing structure in order to defend the interests of the dominant coalition that centralizes power. In order to study the applicability of this approach to an organization, it is necessary to study the history of that enterprise or organization, understand its problems, and analyze the socio-political context that impacts the organization and the evolution of the organization. Carolyn Dunn and Michelle Eble (2014) give an example of critical analysis showing how power relations affect crisis communication.

Demers and Giroux propose a constructionist approach concentrating on the knowledge as the fruit of processes, erasing the separation between that which is known and those who are doing the knowing. This approach leaves room for communication with the observation that an object is not absorbed by the cognitive processes of the observer, but by language, i.e., through a collective process of understanding. In fact, Giroux has touched upon Weick's enactment theory, which we will talk about later when we look at the way communication is used in the Thai Department of Disease Control (DDC) at the end. After a certain amount of reflection, we believe that a mixture of the functionalist and interpretive approaches might describe the DDC's communication strategies, at least as the DDC itself would see them. That is not to say that an outsider looking in at the DDC in its sociopolitical context need eschew a critical analysis...

3.2 Definitions of Crisis Communication

“Crises are characterized by low probability/high consequence events that threaten the most fundamental goals of an organization. Because of their low probability, these events defy interpretations and impose severe demands on sensemaking. The less adequate the sensemaking process directed at a crisis, the more likely it is that the crisis will get out of control. That straightforward proposition conceals a difficult dilemma because people

think by acting. To sort out a crisis as it unfolds often requires action which simultaneously generates the raw material that is used for sensemaking and affects the unfolding crisis itself. There is a delicate tradeoff between dangerous action which produces understanding and safe inaction which produces confusion.” (Weick, 1988)

Alessandra Mazzei and Silvia Ravazzani have noted that crisis communication is a rapidly developing field, but a need for research on effective internal crisis communication strategies still exists: not only do crises affect the tangible assets of a company; they also affect intangibles such as trust and reputation. They look at the effects of the 2008 financial crisis on Italian companies, and note that companies unable to protect these intangibles are at risk of being unable to leverage their employees as advocates when opportunities reappear during the aftermath of the crisis (Mazzei & Ravazzani, 2014).

3.3 Definition of Sensemaking and Enactment

“An enacted environment is the residuum of changes produced by enactment. The word ‘residuum’ is preferred to the word ‘residue’ because residuum emphasizes that what is left after a process cannot be ignored or left out of account because it has potential significance (Webster’s Dictionary of Synonyms, 1951, p. 694). The product of enactment is not an accident, an afterthought, or a byproduct. Instead, it is an orderly, material, social construction that is subject to multiple interpretations. Enacted environments contain real objects such as reactors, pipes and valves. The existence of these objects is not questioned, but their significance, meaning, and content is. These objects are inconsequential until they are acted upon and then incorporated retrospectively into events, situations, and explanations.” (Weick, 1988)

According to Weick (1979), organizations are in the process of organizing, that is to say that they undergo constant change. Enactment results because people are conscious of relationships, and act to regulate and make sense of these relationships so as impose continuity and coordination on these relations. According to Weick (1988), the concept derives from four areas of research applied to organizations: self-fulfilling prophecies (E. E. Jones, 1986; R. A. Jones, 1977; Snyder, 1984, all as cited in Weick, 1988), retrospective sensemaking (Staw, 1980; Weick, 1979, both as cited in Weick, 1988), commitment (Salancik, 1977; Staw, 1982, both as cited in Weick, 1988),

and social information processing (Salancik & Pfeffer, 1978, as cited in Weick, 1988). When people act, they bring events and structures into existence and set them in motion. These may not have existed within an organization before someone acted.

“The external environment literally bends around the enactments of people, and much of the activity of sense-making involves an effort to separate the externality from the action” (Weick, 1988).

In a crisis, it is often necessary to act on incomplete information in order to make sense of the events, which can, in its turn, aggravate the crisis by in effect creating a new crisis. It is a double-edged sword: one cannot enact a change for the better in a situation without making sense of it; one cannot make sense of the situation without making a change in it. As Weick puts it, “Errors are less likely to enlarge if they are understood more fully, more quickly. If we can understand the process of sensemaking during a crisis, then we can help people to prevent larger crises by smarter management of small crises. It is this sense in which enactment blurs the line between crisis prevention and crisis management. By understanding triggering events and the ways in which small sensemaking actions can grow into large senseless disasters, we hope to develop a better understanding of how crises can be isolated and contained” (Weick, 1988).

Weick presented the Tenerife airport disaster and the fire at Mann Gulch National Park as examples of failures of sense making, as the people involved enacted incremental steps toward disaster based on existing preconceptions until sensemaking broke down entirely. He attempted to present how the instincts, intuition, experience and roles of team members can affect the way they enact or react differently in a crisis situation (Weick, 2001).

3.4 Notes on application of theory to communication within the governmental organization

Theory is a method for researchers to make sense of the facts on the ground. Like any good sense making, it is a matter of trying something out, seeing the results, and adjusting one’s understanding to fit.

In the case of many bureaucracies, the managers there will probably look at their organization and its communication in an essentially functionalist fashion (even if they are unaware of the terminology and theory), and, for an organization that is specifically tasked with dealing with

crises and coordinating with the actors in the field, there is some justification for doing so: the stable existence of procedures and channels of communication, regardless of the details of particular messages, are a must for that task. The management of the authority probably also sees the organization as collegial along the lines of the interpretative paradigm (and subject to some of the shortcomings of that approach).

There may be some cognitive dissonance in that, but we are inclined to see the various paradigms as being best fitted for use at varying levels, the interpretative paradigm being best suited for the description of quite low-level functions within the organization, the functional style being suited for describing the anatomy of an organization, and the critical paradigm being most apt for describing the organization's "ecology". That is not to say that these paradigms are completely limited to these pigeonholes (far from!), or, for that matter, that any of these paradigms is complete or without weaknesses. The methodology we shall use will be essentially functionalist – the kinds of questions that the structured interviews described in the next section favor will tend to lean that way – but the collected data may suggest other approaches.

4. Methodology

This section is dedicated to methods of coming to an understanding of internal crisis communication within the Thai Department of Disease Control (DDC), as well as the type of methodology and material used in this study.

4.1 Case studies

In order to conduct this study, a qualitative research approach was used, as the nature of the research was essentially exploratory: we have attempted to come to an understanding of the DDC's internal communication processes for handling pandemic crises, and assess how they worked in handling specific outbreaks of communicable diseases, comparing the circumstances and results to those found in similar cases in the literature. If the research has uncovered problems with these processes, it is hoped that it has also uncovered pointers to solutions for these problems through the literature.

In this particular study, the question was to determine the particular outbreaks to serve as its foundation. The case studies chosen study the DDC's internal communication processes for the H5N1, influenza and MERS outbreaks. The reason behind the choice came from the degree of pride in teamwork of the department's personnel, the (relatively) recent dates of the occurrences, and, as stated in the Introduction, to view the Department's responses since 2003's SARS outbreak. Even though, as stated by DDC personnel, there has been no general, widespread outbreak of H5N1 and MERS for a number of years (Department of Disease Control Disease and Health Risks Weekly online bulletin, 2017), cases nevertheless found their way into Thailand, and were kept under control and surveillance by the DDC, health emergency units and hospitals. The news also leaked out to the public, and rumors of the spread of disease traumatized Thai citizens and those in neighboring countries. According to the project head and lead DDC communicator (in conversations we conducted in 2017 to prepare for the research), these two crises had different impacts: the personnel involved had a lesser degree of appreciation for the work involved in handling the H5N1 influenza than they did for the MERS outbreak.

4.2 Data collection methods

The data collection methods were dictated by the qualitative nature of the research and the accessibility of the data.

4.2.1 Qualitative interviews

We conducted in-depth interviews with eighteen (18) DDC employees from all levels, from top administrators to field personnel, head office to regional, regarding the communication strategies used internally (and the media channels available to execute them), perceptions regarding the timeliness and accuracy of information sent and received, and problems in communication perceived in the pursuit of their duties during these pandemics. We tried to interview personnel following the paths of information flow related to a pandemic, from the relevant Bureaus (Epidemiology, Emerging Infectious Diseases) to those charged with disseminating information to the public (Office of Risk Communication and Health Behavior Development), to the

provincial and urban offices dealing directly with hospitals, clinics and medical practices (see the organization chart in the Appendix A.3), at both managerial and professional levels. Table 1 will give some idea of the spread of personnel we were actually able to interview.

PARTICIPANT	M/F	LENGTH OF EMPLOYMENT	EDUCATIONAL SPECIALIZATION	JOB FUNCTION	HQ/FIELD?
P.1	M	8 years	Master in Public Health, Bachelor degree, M.D in Epidemiology	Director of the Department of Risk Communication	HQ
P.2	F	17 years	Epidemiology	Emerging Infectious Disease	HQ
P.3	F	21 years	Pediatrics.	DDC local district branch in Khon Kaen.	Field
P.4	M	10 years	Preventative medicine	Deputy Director-General	HQ
P.5	M	13 years	Epidemiology	General communicable diseases.	HQ
P.6	M	16 years	Epidemiology.	SAT (situation awareness team) monitoring	HQ
P.7	F	22 years	Epidemiology.	Outbreak cases: Influenza and SARS – Chief of port quarantine at Suvarnabhumi International Airport; MERS-CoV - Chief of international transmitted infectious disease mission.	Field, HQ
P.8	F	18 years	Veterinarian	Epidemiologist - Head of section for diseases transmissible from animals to humans	HQ
P.9	F	23 years	Pediatrics.	Full time doctor at Bamrasnaradura Infectious Diseases Hospital.	Field
P.10	M	15 years	Epidemiology	HIV vaccine lab for 7 years, AIDS/TB investigator for 7 years and 6 months.	HQ
P.11	F	19 years	Community health, public health program.	Public relations in the Nong Khai area	Field
P.12	M	21 years	Public health.	Head of risk communication.	Field
P.13	F	29 years	Mass communication.	Public relations, TV and media news monitoring.	Field
P.14	F	32 years	Public health.	Public relations, TV and media news monitoring.	Field
P.15	F	13 years	Internal medicine.	Risk communication team.	Field
P.16	F	8 years (at DDC)	Health protection.	Risk communication team.	Field

P.17	M	8 years (at DDC)	Epidemiology, health protection, MBA.	Director of the DDC.	HQ
P.18	F	Approx. 13 years	Management and public health.	Specialist during H5N1, team manager (Risk Communication) during MERS-CoV, Zika and influenza	HQ

Table 1. Demographics of participants.

The initial plan was to formulate the interview questions at an individual or role level, according to the roles of the interviewees. For instance, interviewing professionals from the Bureau of Epidemiology would require asking whether they received advance advisories on the pandemics, when and from what sources; by what routes they received case reports from the field, and how quickly; what mechanisms were in place to monitor such cases; what (and *how much*) input they had into communiques to the public and to the field; what problems they encountered in disseminating accurate information throughout the organization, and conversely what problems they encountered in receiving accurate information from the field; and so forth. By contrast, personnel in the field offices will need to be asked how and when they first became aware of the pandemic; if different from their first awareness, how and when they first received official notification of the pandemic from within the DDS; what methods head office used for notification and follow-ups; how accurate, timely and thorough the information proved to be; whether there were adequate avenues available for feedback and reporting cases to head office; if so, what these were; what problems they encountered in acquiring adequate information to pass on to the hospitals, clinics and medical practices in their region; how the pandemic actually impacted their region; and so forth.

The closest methodology in the above literature review would be Mazzei and Ravazzani (2014), although there are important differences in that, instead of contributions from many organizations and a single class of communication professionals (and large sample-size surveys as well as interviews), we are dealing with a single organizational culture and all levels within the organization (not just those tasked with managing communication). Accordingly, we have not plotted strategies against Mazzei and Ravazzani's particular grid.

Unfortunately, due to a wave of pandemics at the time the interviews were conducted (rabies as the researcher arrived in Bangkok, Zika as she was preparing to leave), many participants or those who wanted to participate in this research were caught up in the rush, which meant that the process (and many of the interviews) had to be simplified and shortened. The interview questions were made generic as a result. But, as there is always a silver lining to dark clouds, the researcher had a real opportunity to observe Department of Disease Control teamwork at Headquarters during the crisis, meet DDC agents from other branches quite fortuitously, which provided an opportunity for interviews that might otherwise never have happened, and to observe the effects of centralization and the use of the new Emergency Operations Center (EOC) system. The participants were very responsive, but we did find that some of the questions were occasionally ``creatively misunderstood``, that is to say, that the interviewees answered the question they wish they had been asked.

4.2.2 Document analysis methodology

In addition, it was our intent to conduct a document analysis as part of this case study, concentrating on daily newspaper accounts of these outbreaks, as well as the relevant manuals, guides and press releases from the Department of Disease Control. The news stories chosen were to be those dealing directly with the case pandemics in order to set a context of external perceptions that might have affected the internal communication of the DDC during the pandemic (in a similar fashion to those noted in Duhamel's article referenced in Part 1). Similarly, DDC press releases regarding the pandemics were to be compared and contrasted to internal information passed to the various groups within the department.

As for the manuals or guides (these are the best translations of the original Thai), the DDC publishes these internally for each pandemic it handles. A better description for these documents might be appraisals, or even "post-mortems": they analyze the Department's response to each pandemic, incorporating lessons learned while dealing with the pandemic and recommendations for future action. These, as official internal appraisals, may profitably be compared to the situations uncovered by the interviews.

One of the reasons these particular documents were chosen was their accessibility: there are numerous online databases, such as Elsevier and the DDC's website (in Thai), that contain many

of the largest Thai newspapers and allow the user to search for key terms within specific date ranges to find all relevant articles. Because all articles are archived, it allows a quick keyword search. Those articles that were in the Thai language were to be translated and analyzed by us. Despite the increasing popularity of web-only sources of news, newspapers remain an important source of news in Thailand. It should be noted that we had access to the DDC guides.

However, the plan, as noted above, failed to survive contact with the situation in the DDC (a rabies outbreak) when the researcher was there conducting her study. The researcher did manage to gather some manuals, and the World Health Organization's IHR assessment for Thailand.

4.3 Data analysis methodology

Before the interviews, it was necessary to sort out the responsibilities of the participants, and the nature of their involvement in the organization's communication processes. The analysis of data collected through interviews was conducted in line with general steps qualitative data analysis with a goal of understanding target opinions and perceptions that indicate what people will do in the given situation (Bonneville, Grosjean & Lagacé, 2007).

A brief description of the interview analysis to be done follows:

1. Transcribing interviews - recorded interviews had to be thoroughly transcribed from audio to text format (and translated as needed).
2. Reading through the data - transcribed interviews were read a couple of times in order to gain an in-depth understanding of collected material, and only later tabulated into central codes and themes.
3. Generating codes and themes - the process of picking up the most iterating and prominent ideas and organizing them into specific clusters, categories. The researcher has categorized and color-coded the themes in a spreadsheet.
4. Interpreting the meaning of the themes - after having structured and presented the interview data, we then interpreted the meanings of the coded data against the background of the participants' personal experiences/reactions, and compared these findings with information gained from the literature or theories.

This last stage involves the deductive feature of this study: detected categories were compared with crisis communication theory as well as with internal crisis communication strategies. The document analysis was to have investigated public perceptions competing with official sources, noting that, as per Duhamel (2007), such sources can have a detrimental effect on internal communication during a crisis (e.g., information overload), necessitating some accommodation to deal with those effects. Manuals, guides and press releases originating from the DDC were to be examined to gain an historical view of how the DDC reacted to the crises along the way, to gain some insight into what they themselves learned from these crises. As stated above, the crisis that was taking place at the time of the researcher`s arrival necessitated a change of plans. With the exception of the WHO`s IHR review, and a few internal DDC documents, the collection of documents was curtailed in favor of direct observation of the DDC during the crisis. Accordingly, the Analysis section has a short documents subsection.

5. Data analysis

After we reviewed our data from the interviews, we arrived at several critical themes that need to be discussed in this section, which are 1. *Hierarchy and internal communication*, 2. *Centralization of information and data transmission*, 3. *Collaboration and networking*, 4. *Manpower and internal communication*, and 5. *Document analysis*.

To put things into perspective as to the events of each outbreak and provide a background to the interviews:

1. Thailand`s incidence of H5N1 was exceeded only by Viet Nam`s during the initial two waves of the pandemic in Southeast Asia during 2004-2005. However, by 2006, there were only 3 cases (and 3 fatalities, per WHO “Emergencies preparedness, response” site, http://www.who.int/csr/don/2006_09_27/en/), and no further cases since, whereas H5N1 is still a problem in the rest of East and Southeast Asia. The reasons for this are that:
 - a) most of Thailand`s poultry industry comprises mainly large producers (by comparison to other countries in the region, which tend to produce a greater percentage of their poultry in small holdings and backyard coops) – this means

larger reservoirs for the virus, but also “chokepoints” that the government can work with;

- b) treating poultry with antibiotics is illegal in Thailand, hence the response to outbreaks in poultry was a complete cull of all poultry in affected areas; and
 - c) the follow up to outbreaks was active surveillance on a door-to-door basis in affected areas, the so-called “X-ray” campaigns (Walker et al, 2012, p.1837).
2. Influenza (H1N1 and H3N2) is a seasonal disease in Thailand, and is generally dealt with by the DDC accordingly. There was a pandemic in 2009, but, ironically, Thailand’s mortality rates peaked the year before (3,534 deaths, all ages, associated with influenza in 2008), and fell considerably during the pandemic year (1,524 deaths associated with influenza in 2009). Thailand’s mortality rates associated with influenza are generally quite high, though, and there is an ongoing preventative vaccine campaign (Aungkulanon et al, 2015). One of the effects of this on the interviews was that the participants did not discuss the 2009 pandemic very much.
 3. There was very limited incidence of MERS-CoV in Thailand during 2015 and 2016, just 3 cases with no fatalities. Two of these were elderly Omanis who flew to Thailand for treatment; the third case was an 18-year old Kuwaiti man who took ill on the flight to Thailand (see WHO “Emergencies preparedness, response” at <http://www.who.int/csr/don/archive/country/tha/en/> for a list of DONs, i.e., Disease Outbreak News). The DDC’s response was: “With support from WHO, national health authorities in Thailand have implemented the following public health measures:
 - enhanced surveillance at points of entry, healthcare facilities and at the community level through the network of Village Health Volunteers;
 - performed regular risk assessments, heightened media monitoring and rumour surveillance, and established a dedicated telephone hotline;
 - sensitized rapid response teams;
 - improved diagnostic testing at designated laboratories;
 - reviewed and strengthened arrangements for infection prevention and control, clinical management and healthcare facility preparedness;

- coordinated risk communication of appropriate messages to communities, travellers and healthcare workers.” (WHO DON, <http://www.who.int/csr/don/10-july-2015-mers-thailand/en/>)

The DDC activated the Emergency Operation Center after the confirmation of the first case (WHO DON, <http://www.who.int/csr/don/20-june-2015-mers-thailand/en/>). This was shortly after the transition from using war rooms to using the EOC model.

5.1 Hierarchy and the Thai Department of Disease Control.

According to Weber as cited in *Interaction in the Thai Bureaucracy: Structure, Culture, and Social Exchange* by David F. Haas (1979, p.96), the classic bureaucratic organizational model is achieved by a rigid division of labor combined with a strict hierarchicalization of authority: “The communication is expected to be vertical, and the coordination of activity of officials at the same level is achieved by referring the problem up the hierarchy until the individuals involved reach a common superior.” Weber, as cited in Thomas Diefenbach and John A.A. Sillince in “Formal and Informal Hierarchy in Different Types of Organization” (2011, p.1517), states that hierarchy can be understood as the vertical formal integration of official position within one explicit organizational structure whereby each position or office is under the control and supervision of a higher one. The authors expand on Weber’s definition by noting that these unequal person-independent roles and positions are linked by lines of top-down control-and-command. They go on to cite Zeitlin: “In a formal hierarchy, the official roles and positions of all members of the system are clearly defined and demarcated from each other; social relationships within organizations are institutionalized and legitimized first and foremost, if not exclusively, as hierarchical relations” (p.1517).

DDC management explicitly endorses such a structure: interviewee P.18 states “*Hierarchy in teamwork is very important, because good management principles require 4 important factors: 1) command; 2) coordination; 3) control and 4) communication. A good leader who knows this and is aware of the surroundings and the situation will lead the team to work faster and systematically in a style of patterns (of action).*” This is confirmed by P.17, who said “*I was very*

satisfied with my team of the time, because we used the system of hierarchy, which made things easier to organize and control.”

We will find that culture greatly predisposes DDC management toward such a view, which is common in much of Southern Asia. For instance, Tahir et al, as cited in Saadia Aziz and Naeem Tariq, “Role of Organization Type, Job Tenure, and Job Hierarchy in Decisional Procrastination and Perceived Locus of Control Among Executives[1] ” (2013, p.27), mention that “South Asian culture is characterized by a passive management style borrowed from the British colonial era, and, with reference to Pakistan, the local culture of public sector organizations also follow the same bureaucratic, centralized and non-responsive style in response to public need (Khilji, 2002)”. Aziz and Tariq’s paper essentially establishes that there is an increase in perceived locus of control with increased hierarchical rank, and a concomitant decrease in procrastination in decision making. They further report that “Cross-cultural differences in self-reported decision-making style and confidence indicated that participants from individualistic cultures (e.g., US, Australia, and New Zealand) were more confident regarding their decision-making ability as compared to those participants who belonged to East Asian, collectivist cultures such as Japan, Hong Kong, and Taiwan (Mann et al., 1998)” (p.27). It should be noted that many of the current study’s participants at subordinate levels did not so much procrastinate in their decision-making as *defer* decision-making to their superiors (P.3: “*I always made my decisions according to meeting results, and work according to DDC policy*”; P.8: “*In a governmental and bureaucratic system, we have to respect the Incident command chain. Sometimes we have the media show up, but we have to send to the incident commander or my boss. We keep track*”; P.11: “*Only what my duty allows me to do, such as deal with some of the media or supervise the team when the supervisor is not there*”; P.14: “*No, I have never made any such decisions, because I have to report every serious issue to my director.*”).

According to Patchanee Malikhao in *Culture and Communication in Thailand* (2017, p.3), contemporary globalization started in 1946, when King (Rama IX) ascended to the throne, and continues to the present.

“In each period, hybridization can be observed, and the current Thai Buddhist culture is a consequence of dynamic interplays among the polity, economic, beliefs, worldview, practices, and social change within the globalization and hybridization processes from

archaic to present....This adoption process denotes trans-nationalization. Sukhothai Kings had a reciprocal relationship with the Buddha's domain, which has the Sangha (Buddhist monk community) as the center. Sukhothai monarchs entered the monkhood and were supposed to rule with ten Buddhist virtues (Ishii 1986: 61 –63). In this period, evidence from inscriptions has shown that the Monarchs conferred the titles of ecclesiastical rank to the Sangha domain. It was a starting point of “state Buddhism” and the hierarchical system in the Sangha.”²

According to Wilson as cited in Haas (1979, p.11), “the constituencies of the men in power consist of personal followings which have been called ‘cliques’.” The majority of the members of these cliques are key players in the civil and military sector. Their ability to deal with uncertainty is also a source of power. For officials, there are three sources: 1) control of scarce resources (money and time); 2) control of the flow of information; and as previously stated, 3) the ability to deal with uncertainty in the environment. As Haas (1979, p.65) reveals, “Great respect is paid to rank in Thai society... a high official enjoys not only the respect of citizenry, but also that of his subordinates in the civil service.... Because their respect and deference are important in defining his self-concept, and the status hierarchy most salient to him is that of the civil service,” the demand of respect and deference can become quite onerous when a very high superior is involved, given that Thai society is much more hierarchical in its ideology than the West. Respect paid to a superior is the norm, and anyone who fails to show respect risks giving serious offense. We find this in our interviews, for instance, where P.2 states “*Relationships are important: if we don't know each other well, always go to the meeting. But in general, everyone has to report to their boss.*” And certainly, the boss has to report to his own boss, the Director in this case.

According to Suvanajata (1973, p.473) as cited in Haas (1979), hierarchical relationships are more important than equalitarian relations in Thai society. This leads to the conclusion that it is difficult to have egalitarian relationships in Thai society (Wichaidit as cited in Haas, 1979).

² Speaking anecdotally, the researcher would note that separation of the Sangha and State is still very porous. She worked for several years as a translator for Mahachulalongkornrajavidyalaya University, the largest Buddhist seminary in the country, where most of her workload involved abstracts and dissertations, and the majority of those were on the subject of governing the nation, its provinces and/or its industry according to Buddhist principles. Those papers, perhaps not surprisingly, often emphasized leadership and submission to authority.

Riggs (1966) and Siffin (1966), as cited in Haas (1979), note the importance of social exchange in vertical cliques in the informal structure of Thai official organizations, Shor (1962) describes the “entrepreneurial strategy” of Thai officials in building their careers, and all of them note the distribution of power based on the control of scarce resources, and the incentive system of the organization which determine the actors’ goals.

In contrast, P.6 saw this hierarchy in her organization as a burden: *“DDC policy during a crisis: I want them to have us work and feel that we have a choice not to do so, voluntarily rather under obligation. I have to go on meetings all the time, I also have to work in the field. I want the DDC to clean up the patronage system completely. I want to stop the pattern of processes in the financial department. I'm a doctor, I'm fine, but the ones who have to follow me, they'll die for sure if they need to spend lots of money.”* P.3 notes similar financial issues during crises: *“On top of that, we run into financial problems because the crisis always happens at the time we lack funds, or at the end of September (when the yearly budget needs to be returned to headquarters) - we don't have our emergency funds. So for me, I'm okay about pay, but what about my team? We can't finish our work and we are tired. Imagine if festival weekend and the outbreak coincide.”*

This opinion is easy to see in people who work on the frontlines, such as the port of entry or DDC branches in other parts of the country. For instance, P.7, who worked at a port of entry, mentioned that many times she and her team *“caught the flu at work ourselves because we were obliged to be on duty 24 hours without break, even during holiday season, and, what's more, departmental cost cutting policies didn't allow medical workers to wear at least N.95 (masks); they just gave us simple hygienic face masks to wear.”* P.6 and P.7 have one thing in common: they saw themselves as victims of the hierarchical system, and the need to be submissive and comply with every order or policy issued made them feel obliged to comply.

Crozier (1964, p.158) argues that in an organization, “each member tries to bind the other with rules to remove their discretion while maintaining his own freedom from restriction. He does so because power depends on the possession of discretion... A person without discretion cannot make his behavior contingent on the response of another and so cannot influence others.”

In Thai civil service agencies, the main source of uncertainty comes from difficulties in obtaining resources to carry out the agency's programs and to reward subordinates. An official who, through his relations with highly placed people in the central administration of his ministry in Bangkok or through his relations with the public, is able to procure resources is powerful in his relations with other officials, and gains the ability to deal with uncertainty, which is another source of power. In short, having discretion, they can use it to reward or punish. The achievement of autonomy depends heavily on building up of one's superiors, especially in Thailand.

Perhaps due to the fact that P.16 and P.17 are at the managerial/administrative level and also at headquarters far from the frontline, they might feel that they can control the situation, as Aziz and Tariq stated that executives are constantly required to make decisions regarding a wide range of issues that involves uncertainty and risk. Their decisions affect not only the direction of the organization, but also the type of productions and services (2013). On the other hand, the majority of the interviewee responses are passive enough to give the researcher the impression that they normally do not need to involve themselves in decision making because, with the director or vice-director presiding, decisions made in war room meetings are, for all intents and purposes, final ones. As a consequence, we have P.1 saying "*There was no problem with the information for sense making, because it depends on the policy maker in the end,*" or P.2 stating "*We argue with the administrators until we receive final decisions and conclusions. After that, no one can argue or talk about it anymore.*" Along a similar vein, P.3 states "*I always made my decisions according to meeting results, and work according to DDC policy.*" Even P.7 noted that her team had to respect the incident command chain. P.8 stated "*during the investigation, H5N1 stood out the most. I worked as PI (Principal Investigator), even though I could not issue commands and had to follow the system and many more.*" This is significant: the DDC assigned PIs without the authority to shape the investigations.

There are, however, dangers to this approach. A hierarchical system contains strong protocols and rules in order to make the organization work smoothly in a well-organized fashion, but these strong protocols can very subtly exacerbate a crisis. We have a pair of examples from Karl E. Weick's book, *Making Sense of the Organization* (2001), namely the Mann Gulch Disaster (Chap. 4, *Collapse of Sensemaking in Organizations: The Mann Gulch Disaster*), and the Las

Palmas Airport Disaster on Tenerife in 1977 (Chap. 5, *The Vulnerable System: an Analysis of the Tenerife Air Disaster*).

Of the two, the Mann Gulch Disaster is probably less applicable to an organization such as the DDC, as it befell a simple team (one leader, one second-in-charge, and subordinates), but, as the team was comprised of “smokejumpers” experienced with just small brush fires, thrown together from a duty roster, under the leadership of an experienced man, it was a form of simple top-down hierarchy. We gave a synopsis of the events leading to the disaster in the foregoing Review of the Literature; suffice to say that, when the team discovered that the situation was more dangerous than their expectations and lay outside their experience, and their leader, who was experienced, made a series of fast decisions that they were ill-equipped to understand, they panicked and catastrophe ensued.

An utter disaster of this sort is not likely to happen in the DDC, where the staff is experienced and well-trained, but it serves as a cautionary tale of what happens when an understanding of a quick-moving situation fails to gel, or gels too slowly, in the people tasked with following orders. We do see situations where DDC employees feel they are not getting the information they need to understand the situation to do their jobs, P.12, for instance: “*We were too rushed at that time. Our team was not ready, and we lacked data that the team needed, such as awareness among citizens.*” P.12, who deals with getting information about the pandemics to the public, feels that they have panicked in certain situations and pushed out incomplete information too fast, but we suspect that one is not always afforded the luxury of waiting in fast-moving situations.

The Tenerife Disaster is even more subtle: one might say that it happened because of *competing* protocols that led to a fatal misunderstanding. On the one hand, one has the air traffic controllers of Las Palmas Airport having to deal with 747 passenger jets that their airport was never designed to handle, improvising taxiways using the main runway, and dealing with a language (English) that was much less needed for the usual local flights that comprised their normal traffic. On the other hand, you had a KLM pilot who had been the chief pilot instructor for KLM for many years and was used to clearing his own takeoffs, and a copilot who had just qualified under him (and was thus used to deferring to him). The pilot of the Pan-Am flight into which the KLM flight crashed was hesitant to use the main runway as a taxiway, but was used to deferring

to air traffic control. All of this was exacerbated by Dutch regulations which placed a hard upper limit on the number of flight hours that pilots were permitted to fly in a given period (with heavy financial penalties for exceeding the limit), which the KLM flight crew was crowding due to the diversion to Las Palmas. The KLM captain started his takeoff before air traffic control had properly cleared it, and met the Pan-Am flight in the middle of the runway.

In this case, a series of lapses into ingrained behavior patterns conditioned by competing protocols led to one of the worst air disasters ever. Again, the DDC is unlikely to see problems of quite this magnitude for similar reasons, because pandemic crises don't move at the same speed as air disasters, but we *have* seen "protocol collisions" take place, notably with the Department of Livestock, which, in the Thai hierarchical system, have to be "booted upstairs" to resolve (e.g., P.17: *"We all think differently as to how we make sense of things, such as the recent proposal made by the Ministry of Livestock regarding using color to divide the pandemic area into green, red and yellow zones. If you are an outsider, you will think that the red zone is the deadly zone, because they don't give a clear definition of colors... it can cause the public to panic and government agencies could use this ambiguity to impose power on the public. For instance, if they say this is a red zone, the agency could prohibit movement within the zone, but in fact movement is ok, but requires care"*; P.8: *"When I did an investigation with the Livestock Department, we duplicated our work, and it made patients feel uncomfortable."*) This is not to say that, say, duplication of effort due to communication failures between teams is limited to work with the Department of Livestock, but it is the sort of exacerbation of problems to be expected when separate hierarchies must collaborate.

So, to briefly summarize, Thai bureaucracy follows a hierarchical model with top-down communication paths, with communication and decision-making being highly centralized at the top, which makes for decisiveness and a certain unanimity of action, but can lead to some problems in responding quickly in the field under conditions of incomplete information, and occasional difficulty coordinating with other organizations that must also respond to pandemics, although this latter seems to occur more in field operations. As we have seen above, resource allocation can also be a problem on occasion, particularly in the field.

5.2 Centralization of information and data transmission.

Giroux and Demers (1998) propose three different types of communication strategies which have changed over time, the functionalist, interpretive and critical approaches. From what the researcher has found, the internal communication strategy of the Thai Department of Disease Control falls under the functionalist type, which is the model of handling information which focuses on the transmission of the message, leaving aside questions of meaning, in the macro-organizational aspect of the communication. In the other words, this approach, which includes the relational human communication approach, avoids the problem of decoding the message, and ensures that communication functions as a controlled tool under the user's direction and works well in the organization. Its purpose is to create a monolithic organization and social harmony internally. This is clearly seen with P.8, who said, *"In a governmental and bureaucratic system, we have to respect the incident command chain. Sometimes we have the media show up, but we have to send to the incident commander or my boss. We keep track."*

Mahmoud Eid wrote in *Interweavement: International Media Ethics and Rational Decision-Making* (p.88) that *the keys fundamental to the effective performance of communication are ethics and responsibility*. But again, in this hierarchical system, the interview results indicate that every piece of data needs to be sent back to headquarters, because, as P.17 claims, *"If we control matters well, we divide the responsibility well, and the information will flow to Central automatically."* P.6 notes that she has no chance to make her own decisions or comment on the issues, because *"they like only when we report back in a paper."* P.8 notes that her team is the first resource for executives, buttressing many answers from other interviewees. P.18, for instance, claimed that the principle data the executives need from the frontlines are the ILI (influenza-like illnesses) database from the SAT (Situation Awareness Team, a team in the Department of Epidemiology), the Internet, social media and Hotline 1422. She goes on to state that *"Once we have collected all the data, these data will be transferred to the admins of the DDC, and then to the Ministry of Public Health through the SAT SME meeting (SAT team meeting with other departments in the DDC), facsimile loop, Chat in the BBM application or the Line app now."* P.17 claims that he has available *"a great deal of information to make decisions and issue orders to all of our teams and branches, and to disseminate to other departments involved in handling the responsibility."*

But at the end, they all have to report back to headquarters. This supports P.7's accusation that the DDC's internal communication is one-way communication, just report the data: *"We almost have no time. We have to follow up on the list of officers (work schedule) ourselves with our chief of administration. The war room? We can almost never attend. We never know what we'll encounter in our work."*

In contrast, P9 replied that, as an administrator, she was both a source of information and the one who sets the standards. She has to believe that everyone is an information source, consequently everyone everywhere has to receive the same information, because often a reporter or member of the general public might ask an employee: *"If that person is informed by social media and frightened, it will make our work much tougher."* She continues, *"So the point of opening the war room is to update the situation, establishing an awareness of the information to get everyone on the same page as to which information can be made public and which cannot. But all in all, we have no policy to hide or suppress the news. If we need to make an official statement, we have to arrange for the person holding responsibility to give the interview, and work together to draft the news coming from the Department."* P.1 states that he submits the data from his team to *"the Governor's inspectors, provincial public health officers, the Department of Livestock Development, sub-district administrations, municipalities, the Ministry of Public Health, our organization, DDC headquarters, other related departments - all paths both vertical and horizontal."* It is probably accurate to state that some people are tasked with disseminating information fairly widely, but they are not the ones to determine which information that would be.

The literature presents us with a similar functionalist system involving war rooms in Craig Duhamel's "Using Lessons from SARS in Tackling Swine Flu: Looking Inward to Develop a Crisis Communication Model" (2009). In Sunnybrook, a "war room", or a team of leaders from across the organization, representing various professions and job functions in the hospital, would meet daily for about an hour or two to discuss and resolve issues related to the outbreak. After the issues had been confirmed, the information would be broadcast via email, voice mail, etc. to entire organization, with follow-ups from either the CEO or the public affairs department, plus unit-level communication tailored to the units from managers and supervisors, and the communication was symmetrical: staff were encouraged to ask questions and provide feedback.

As a result, broadcast communication impacted staff and hospital leadership on two fronts, as it could be reaffirmed at departmental level, providing an additional sense of stability in a chaotic environment. Duhamel noted the first barrier to internal communication is information overload, i.e., too many sources, both internal and external, of information of varying accuracy to process, which fits well with P.9's comment regarding the Ebola outbreak, "*Our work often came to a standstill because we experienced an unclear sense of the data. 100% of our personnel were in terror,*" and P.17's "*We need to balance data accuracy and organizational responsibility before anything.*"

Duhamel's proposal, a model based on his findings, a tiered two-way dissemination of information with the tone set by top management, where information is gathered, evaluated and broadcast from a war room to line managers, and from there to staff, allowing the message to be adapted to the requirements of each line unit, including feedback mechanisms set up for all methods of information dissemination to allow management to see how well they are getting across the message, and to allow them to find the compromises needed to make the message palatable, matches the DDC's practices to a fair extent.

According to Nicole Giroux, "*Cette vision est proche de la stratégie définie comme un plan (Mintzberg, 1988), au sens où un plan est un énoncé explicite de la stratégie. Cette conception attire l'attention, du point de vue de la formulation, d'une part sur la collecte et le traitement de l'information qui sont des opérations nécessaires à l'élaboration du plan et, d'autre part, sur la construction de l'énoncé stratégique..*" (*This vision is close to the strategy defined as a plan, in the sense that a plan is an explicit statement of the strategy. This design draws attention from the point of view of formulation, on the one hand, to the collection and processing of information which are operations necessary for drawing up the plan and, on the other hand, to construction of the strategic statement...*). The DDC does generate quite detailed plans in line with their vision to cover the contingencies that might arise. However, there is an old military aphorism to the effect that no plan survives contact with the enemy, that is, no plan can cover *all* possible contingencies. Dr. Kathleen Sutcliffe, in PublicResourceOrg's video "Managing the Unexpected - Part 1 - National Advanced Fire and Resource Institute 2005 - - Part 1 - Overview of High Reliability Organizations" (2010, retrieved from <https://www.youtube.com/watch?v=aHfPf41CYdE>), states "One of the things we know about

high reliability organizations is that they really try to anticipate surprises, as we said, so they do a lot of scenario building, they do have tons of plans, but at the same time, they know that plans sometimes can get them into trouble, (10:00) because plans do have drawbacks. And some of those drawbacks that I've always thought are important to think about are some of the kinds of things like here: plans can lead to mindlessness. In fact, we talk about the idea that plans can contribute to the fallacy of predetermination. Plans contain many kinds of expectations. When you create a plan, you assume that the world is going to unfold in a particular way.”

Thus feedback from the field is necessary, as stated by P.18: *“Yes. When some strategy doesn't make sense or doesn't fit with our work, as during the Zika outbreak, they open up a chance for us to talk and explain our reasoning.”* However, P.2 claims that they argue with the administrators until they receive final decisions and conclusions. *“After that, no one can argue or talk about it anymore.”*

In summary, communication in the DDC follows a functionalist model that focuses on the transmission of the message rather than its meaning, with an emphasis on the means of transmission and its path through the hierarchy, with possible ramifications for feedback and coordination, both vertically between HQ and the field, and laterally between bureaus and departments at the same level. In the DDC, information flows upwards to management, is collated and presented by the SAT at meetings presided by the Director or Vice-Director, who makes decisions based on that information which are disseminated back down to the rank-and-file and branch operations. There are some provisions for feedback: it is not clear how effective they are. The war room setup as described by Duhamel (2009) is very similar to that which was in use in the DDC, and was very effective at dispelling information overload during a crisis. There are two main differences: Duhamel's organization broadcast current and updated information simultaneously at two levels, organizational and departmental, and made many routes available for feedback. The newer EOC (Emergency Operations Center) as discussed above, however, is even closer to Duhamel's model.

5.3 Networking and collaboration

What does networking mean?

A fairly straightforward definition is given by Michelle Malese in the Web article “Networking” at <https://www.beyondintractability.org/essay/networking> (2005): “Networking is a matter of creating useful linkages, both within and among communities, organizations, and societies, in order to mobilize resources and achieve various goals.(Bartle, Elements of Community Strength, found at <http://cec.vcn.bc.ca/cmp/modules/mea-ele.htm>). One author describes it as the "art of building alliances." (ibid).”.)

To collaborate is also equally straightforward: according to the Merriam-Webster dictionary, online at <https://www.merriam-webster.com/dictionary/collaborate>, we have the following definition:

1. to work jointly with others or together especially in an intellectual endeavor – “An international team of scientists collaborated on the study.”
2. to cooperate with or willingly assist an enemy of one's country and especially an occupying force – “suspected of collaborating with the enemy”
3. to cooperate with an agency or instrumentality with which one is not immediately connected – “The two schools collaborate on library services.”

The first and third definitions apply to our needs. One can thus say that networking is a vehicle for collaboration.

Diefenbach and Sillence list a number of different kinds of organizations (2011, p.1517-1519):

- the bureaucratic or orthodox organization defined previously;
- the professional organization – “*Public or private sector organizations where people of the same or complementing professions jointly run large parts of the organizational affairs*” (which does apply to a certain extent to the DDC);
- the representative democratic organization, where ideas such as empowerment, workplace democracy, shared ownership and so forth are made real (cooperatives are a good example);

- the hybrid or postmodern organization, where it was hoped to supplant or at least reform bureaucratic or orthodox organizations with quasi-autonomous teams, self-managing projects, decentralized work units, etc.; and
- the network organization, identified as a new type of organization by Palmer, Benveniste, & Dunford (2007) and Powell (1990).

However, they go on to say:

“However, the term ‘network’ is used for a whole range of organizations. There can be fairly orthodox intra- and inter-organizational networks which are largely based on functionalistic and managerial principles, and even the research of their structures and processes is functionalistic (e.g. Contractor, Wasserman, & Faust, 2006; Podolny & Page, 1998). This type of network is structured hierarchically and its members stratified because of ‘functional necessities’. For example, there is often still a centre which is responsible for, and retains control over, most important issues such as strategic decisions, the setting of key performance indicators or allocation of resources. In contrast, other members of the ‘network’ are fragmented into subgroups – again, for ‘functional reasons’. They are located at the ‘periphery’, are responsible for more operational and technical issues, excluded from key decision-making, and have to report to the centre (e.g. Clegg et al., 2006, p.338). In contrast, this paper concentrates on network organizations which are fully decentralized entities comprising (seemingly) truly autonomous, self-directed and participative units (Ekbja & Kling, 2005, p. 163)” (p.1519).

The hierarchical “network organization” described above is, we suspect, a fair description of the DDC. In the researcher’s opinion, if networking and collaboration within the DDC were good enough, we would not hear statements such as that of P.3: *“When an outbreak arrives, the work on it is piled on top of the regular work, so the regular work that needs to be submitted to Headquarter can’t be done and our productivity drops. The ones who work on each are actually the same team, because we don’t have that many people. So we all end up getting sick when we go in the actual pandemic area.”* And then one has P.7 complaining about the team that was sent to help her: *“My team wants people who arrive to become part of the team, or to be people who*

have been part of the team. My team wants to have meetings that let our port people describe events and tell you what happened. To increase the staff, we need more specialists, more doctors, and more personnel who know how to work hard.”

On the other hand, if you are in administration, networking is a piece of cake. As P.4 states, *“If it is serious pandemic, we all need to come to a mutual agreement, but if it is just small issue, like one this morning where an ammonia substance leaked at a factory, I just called the Ministry of Industry and cleared the issue myself.”* P.13 also works at the administrative level with EID (Department of Emergent Infectious Disease): her team has *“networks with every ministry involved, so that the information can always be integrated, we always work collaboratively with our networks, so we just need to prepare more and work together more, not just during pandemics.”*

Contrast this with P.7’s networking in the field to gather information: *“We just handled the search for data ourselves. Sometimes Dr. XXX helped. A clerk, Mr. YYY, would stay at the quarantine station all day, and sleep in the meeting room to gather all the data and present it to us every morning at 7 AM. He also got the data from Customs and Immigration.”* P.7 also noted (in her full interview) that the informal networks she had built with the pilots and Port officials to aid in dealing with medical emergencies and containing food-transmitted diseases has been effectively dissolved.

Wolbers et al (2017) suggest fragmentation as a way for multi-organizational response teams to respond to the ambiguity of a crisis, by partitioning the problem into smaller tasks that can be handled concurrently on the basis of existing information, using workarounds, delegation and expertise demarcation to get around a lack of coordination. This may be of use when dealing with the constraints and obstacles encountered in the field. Whether such teams are feasible for the DDC, however, might be a different matter. As we see from the differing responses between Headquarters staff and the field, Thai bureaucratic culture centralizes informal networking and collaboration as well as information and resource flows: field agents are on the periphery. We will discuss this further in the next section.

To recapitulate, networking is a matter of creating linkages within or between organizations as a vehicle for collaboration to further the goals of the individual or organization. Diefenbach and

Sillence (2011, p.1519) note that organizational networks can be very hierarchical and orthodox, with the people responsible for operational and technical issues relegated to the periphery, cut off from key decision-making and having to report to central authorities. From the responses we received from field staff, this seems to be a fair description of how the DDC works. The split seems to lie between Headquarters and the field, with HQ personnel well-connected to management and other departments, with some input into policy and decision-making, and the field having rather less input and connections (as shown in the contrast between, say, P.13's statements and P.7's).

5.4 Manpower and internal communication

P.7's plea for trained staff in the previous section strongly suggests that, when Headquarters sent personnel to help cover manpower shortages at the port of entry when the situation heated up there, his team's productivity did not improve, possibly even dropped. Indeed, he states that when his team had to report being short-staffed, *"They tried sending untrained personnel to help us. Finding trained personnel isn't possible, because there is no systematic training to this day."*

Problems with productivity when adding manpower are really subtle problems of internal communication. The classic study of this is, surprisingly enough, a book on software project management, *The Mythical Man-Month: Essays on Software Engineering* by Fred Brooks (1977). Brooks notes "In tasks that can be partitioned but which require communication among the subtasks, the effort of communication must be added to the amount of work to be done... The added burden of communication is made up of two parts, training and intercommunication. Each worker must be trained in the technology, the goals of the effort, the overall strategy, and the plan of work. This training cannot be partitioned, so this part of the added effort varies linearly with the number of workers.

"Intercommunication is worse. If each part of the task must be separately coordinated with each other part, the effort increases as $n(n-1)/2$. Three workers require three times as much pairwise intercommunication as two; four require six times as much as two. If, moreover, there need to be conferences among three, four, etc., workers to resolve things jointly, matters get worse yet. The added effort of communicating may fully counteract the division of the original task" (p.17-18).

If this is a problem when “throwing bodies” at an overdue software project, when those “bodies” maybe be assumed to have at least some specialized training in the nature of the work, how much worse is it for a situation developing in real time at a quarantine station, when the “bodies” may be assumed to lack even that much training?

Manpower and task allocation issues can have other effects, such as P.15’s claim that their team’s confusion during an outbreak when her team had to work together was because her team didn’t divide their work clearly. We also have P.3’s comments (mentioned above in the section on hierarchy) regarding the workload of an outbreak being added on top of regular duties. She goes on to say, “We don’t have enough people to work, so we have to foresee which DDC branch close to us can come to help us.” Of course, a large part of this may be a lack of resources to allocate to the field.

To summarize, when untrained temporary staff is sent to aid the staff at the ports of entry during a spike in the work (such as during an emergency), it is very likely that productivity *drops* rather than improves. This may be considered a corollary of Brooks’ Law (“Adding manpower to a late project will make it later.”), as certain kinds of communication *must* take place and require linear time, mainly getting the new personnel up to speed. Coordinating the division of work also requires time.

5.5 Document analysis

While the researcher was collecting research data, the Thai DDC was quite gracious in its collaboration by providing a risk communication manual, the DDC administrators’ calendar, and, most importantly, the IHR manual and evaluation result booklet. Because of the necessity of adapting the study to unforeseen circumstances onsite, this section is less of an analysis than an exposition of collaborative documents.

In this section, the researcher will discuss these manuals individually. We will begin with the *Joint IHR External Evaluation of IHR Core Capacities of the Kingdom of Thailand* (World Health Organization, 2017), both the answer book and results. IHR stands for the World Health Organization’s International Health Regulations, with the WHO as the external evaluator team. These two booklets cover several categories based on documentary data such as directives from the Ministry, action plans, lab surveillance, reports, and after-action reviews in 2015 and 2016*

(the after-action review is used by the Situation Awareness Team) that they received from the DDC. The booklet of evaluation data and the evaluation results booklet strongly support our research findings in that the centralization and systematization of the organization could lead to an unwieldy bureaucracy which has the possibility of breaking down communication during serious future outbreaks, perhaps even leading to burn out and exhaustion in those working at the pandemic site. The IHR report notes among other things that the IHR coordination mechanism is embedded in legislation (a cabinet resolution of 2007), and that the National IHR Committee functioned well during the MERS-CoV, Zika and Ebola outbreaks, but areas that need strengthening are:

- More regular and consistent action planning following events and exercises.
- *Further expansion of the national coordination mechanism could lead to it becoming overly bureaucratic and ineffective.* (Emphasis added.)
- Increased clarity is needed on the roles and responsibilities of various ministries to enable efficient scale-up during serious health events.
- *Inter-sectoral coordination at the regional and local level is not as strong as at the national level.* (Emphasis added.)
- There is no regular evaluation of communication and coordination mechanisms, nor standard operating procedures for coordination and communication between the National Focal Point and relevant sectors, agencies and ministries.
- In addition to high-level coordination through committees, consideration should be given to permanent coordination on key issues through sharing staff between agencies (WHO, 2017).

This deals with the activities of *all* concerned agencies as a cooperating whole, but we can see some similarities within the DDC itself: a tendency to over-bureaucratization, problems coordinating with the regions, a tendency to communicate within silos rather than across them.

This likely stems from the hierarchical culture of the Thai civil service, which we will discuss more fully in the next section.

Next, the risk communication manual is a set of guidelines from the DDC's Department of Risk Communication. It has 9 chapters starting with a definition of communication, and continuing by defining risk communication and establishing its importance, defining the DRC's mission and strategic plan for risk communication with indications from 2559-2561 BE (2016-2018 CE), as well as a national strategic plan for emerging diseases, core functions and a system to handle the core functions, and the new EOC procedures. The manual defines levels for situations ranging from normal to crisis, and assigns standard operating procedures to each. What is interesting is that, when a crisis rises to level 3, i.e., 25% or more of the SAT is sent to deal with the outbreak, non-team staff are required to come help. But at level 4, which means above 25%, or an uncontrolled outbreak, more people are sent to help, and workers can omit unnecessary work and need not rush the work.

We are reminded of P.6's statement: *"We don't have problems in communication, but what we have is our burden and our mission. We are overloaded with work, even though the DDC is recruiting more people to help us. But our regular mission still needs to be done. Sometime we have to go onsite to investigate, but we need money for transportation for the team... so we need to make a request from the financial department. As you know, the financial department always makes like a crisis can wait, so we end up paying out of our own pockets first, then being reimbursed a few weeks later after the job is done or we have to go to another site."*

Thus it might be better if the entire DDC comes to an agreement and finds people to handle personnel management. I would suggest a change to the manual: when the pandemic start to require more than 10% of the SAT, they should start to prepare, and stop unnecessary work. The rest of the book has examples of how to handle risk communication in differing circumstances, with examples from the Zika, MERS-CoV and H5N1 outbreaks. The last chapter is how to communicate with press and media, which is very interesting and well written.

Finally, the researcher had the opportunity to lay hands on the DDC strategic plan calendar booklet from the director. This calendar is a colorful A5 booklet that includes the strategic and direction plans for 2561 BE (2018 CE), ministry regulations, mission, with the strategic plan, and

short and long-term goals, explained in pictures. Following the core content, it had a calendar section and a contacts list of all DDC personnel.

6. Discussion

This study has as its purpose to look into the issues which a governmental body (in this specific case, the Thai Department of Disease Control) tasked with dealing with pandemic crises may encounter, with subsidiary questions regarding strategies in use in the organization, potential problems to be encountered, and effective strategies to counter those problems (and factors that might impede their use). We have noted that the DDC is a hierarchical organization, and a centralized one, with evident communication problems between the center and the periphery. To better understand the DDC, we need to look into its “environment”, how it operates during a crisis, and see if we can locate possible issues that stem from these

Accordingly, cultural factors, centralization and sense-making are the three main factors that will be discussed in this part. According to our findings, the ones who feel they can provide feedback are not just management, but subordinate employees at Headquarters as well. However, field and branch agents do not share in this belief, thus on three fronts (cultural influence, systematization and decision-making) is a struggle which impedes the efficiency of the DDC’s internal communication.

Culture shapes not only individuals in a society, but it also influences the way people interact with each other in a group, and the development of conventions for sampling information and determining how much weight to assign the sampled elements from the environment (Triandis, 1989). For example, people in hierarchical cultures are more likely to sample clues about hierarchy than clues about aesthetics. Triandis (1989) argued that people in individualist cultures, such as those of North and Western Europe, and North America, sample with high probability elements of the personal self, e.g., “I am busy, I am kind”. People from collectivist cultures, such as those of Asia, Africa, and South America, tend to sample mostly elements of the collective self, e.g., “my family thinks I am too busy, my coworkers think I am kind” (Triandis, McCusker, & Hui, 1990; Trafimow, Triandis, & Goto, 1991). According to Haas, “*Thai peasant social life is tightly organized in a number of ways. One of the most important is through a relationship of*

juniors and seniors. Great respect is paid by young people to their seniors, and benefits are frequently obtained by a sort of patronage system in which juniors give deference and obedience in exchange for help and protection” (1979, p.15). Surprisingly, the DDC has no real issues about sex equality in workplace, given that women like P.18 have considerable influence within the organization.

Certain of Hofstede’s metrics (2011) may be of use in grasping the cultural matrix in which the DDC is embedded. Hofstede defines power distance as *“the extent to which the less powerful members of organizations and institutions (like the family) accept and expect that power is distributed unequally”* (p.9). By this measure Thailand has a large power distance (*“Hierarchy means existential inequality”; “Subordinates expect to be told what to do”*). Uncertainty avoidance reflects a culture’s tolerance of ambiguity and acceptance of risk (p.10). Thailand tends to lean toward strong uncertainty avoidance (*“Intolerance of deviant persons and ideas: what is different is dangerous”; “Need for clarity and structure”; “Emotional need for rules – even if not obeyed”*). On the individualism/collectivism measure (p.11), Thailand falls on the collectivist side (*“Stress on belonging”; “Others classified as in-group or out-group”; “Opinions and votes predetermined by in-group”; “Relationship prevails over task”*). Thai culture tends to have short-term orientation by Hofstede’s standards: *“There are universal guidelines about what is good and evil”; “Traditions are sacrosanct”; “Supposed to be proud of one’s country”; “Service to others is an important goal”; “Slow or no economic growth of poor countries”*. Regarding the last, Thailand is more a developing country than a poor one, but it is developing somewhat slowly, and the government has rationalized this with the notion of the “sufficiency economy”, that is, just enough economic growth to make sure that no one is wanting. The relationship view of work means that the DDC staff tends to look at the organization as a big family, but when they talk in detail about a case involving someone they do not know, one will often hear “They will report to their boss” or “It will be discussed in the group meeting, if not in the war room”.

Earlier we touched upon the hierarchy system in Thai bureaucracy and culture. We will describe some of how the DDC works from our observations and according to what came up in a thoroughgoing conversation with P.1. There are generally three levels of internal communication within the DDC team: 1. Directors to the heads of departments, 2. Department heads to workers

under their lead, and 3. Directors and all administrators with the heads of departments at Headquarters and leaders in pandemic areas. In normal situations, they will have monthly meetings, weekly meetings, and video conference meetings with the other DDC branches. They use social media applications such as Mail Loops, Fax, phone calls, the BBM application (department heads), and currently the Line application, which is widely available for the various types of smartphone. Each department can create their own group to chat among the team, but the most important information comes from the meeting results.

For the teams/departments within Headquarters and the leaders of the DDC branches, the SAT (Situation Awareness Team) will send new information via Email daily before 8 o'clock. Then the spokesperson of each departments will come to the meeting every Monday at 8 am. The meeting is called the SAT SEM (Situation Emergency Management meeting), but this meeting has become an institution since the Zika outbreak in order to prepare the center team to be alert and prepared at all times. However, the researcher has come to doubt that this practice will also involve the branches, pandemic regions or even ports of entry, although every team claims to have their own team meetings.

As the researcher observed this 8 AM meeting, there were personnel from the SAT, the 1422 hotline and the delegations of each department. There was also a short video conference with the DDC branches. The ambiance during that time was relaxed because there was no administrator at the meeting, which was different from the EOC meeting the researcher attended about smoke and a rise in atmospheric CO₂ in the Northern region. This might have been because of the presence of a press team, directors from the Treasury and Transport departments, specialists and senior advisers, etc. at the EOC meeting, which made the meeting more intense and stressful for even the DDC branch teams, except for certain regional teams that were very busy with the matter on which they were to report, which delayed their entrance into the video conference meeting. One of the DDC branches, ignorant of the presence of the press, asked in front of everyone, "Where's the Chiang Mai team?" ("ทีมสครเชียงใหม่ยังไม่มาอีกหรือวะ", which is in informal mood). This might look funny, but the gaffe leads one to suspect that that team might have been in for some difficulty.

During the time the researcher was at the DDC, there was more communication within Headquarters and with one branch team that had a critical pandemic (the researcher's stay at the

DDC coincided with a rabies outbreak), in the form of one-on-one meetings (with the Director) and team meetings. In short, video conferencing and telephone follow-up by the leaders of each department concerned with the event and the director to the head of the team in the pandemic area is the path along which everyone reports, and by which they receive their orders, as mentioned in interviews with P.6, P.8 and P.14. This is how the flow of data has been systematized in hierarchical fashion.

One of the problems of a very hierarchical system is that teams that *should* coordinate quite directly sometimes act at cross-purposes. At one point during her stay in Thailand, the researcher sat in on a meeting between a small team tasked with monitoring outbreaks, primarily reliant on official reports from the field (mainly hospitals), and another much larger team tasked with (among other responsibilities) monitoring less reliable sources, i.e., news media. Evidently a patient at a hospital whom the smaller team had been monitoring had died overnight, and this team, whose last report received from the hospital, had indicated that the patient was comatose, was chastised by the leader of the larger team for not confirming the patient's status that morning. Undoubtedly the smaller team should have confirmed the case status, but it is a small team tasked with many cases, and under such circumstances, is likely to wait for the hospital to send the report (and hospitals generally have their own workload problems). Evidently passing on the news report when it came in and asking the lab to get confirmation from the hospital was out of the question. It should be noted that the leader of the larger team had more contact with top management.

However, centralization is by no means necessarily a bad thing for an organization. The WHO's international health core capacity report noted that the DDC has many effective policies and is well organized, with a rating of 4 out of 5. In fact, the DDC accomplishes its mission and closes cases. Even though it is not fast, cases are nevertheless closed before epidemics have a chance to start a second generation. Such problems as there are seem to stem primarily from the division of the team into "inside HQ"/"outside HQ".

Finally, we will discuss sensemaking. Florence Allard-Poesi notes in "The Paradox of Sensemaking in Organizational Analysis" (2005) that making sense of sensemaking is an "active, purposeful and subjective (*researcher's emphasis*) sensemaking process" (p.171). She presents "two different routes that may enable us to re-engage in sensemaking processes. The

postmodern route, on the one hand, invites us, through deconstruction, to engage against our sensemaking as a way of uncovering both the constitutive and the undecidable character of sensemaking activities. The pragmatist (or participative) route, on the other hand, suggests that, through participatory action research, we fully engage in sensemaking with organization members and recognize the socially constructed aspect of all sensemaking activities.” Allard-Poesi points out that sensemaking is an ongoing process to maintain a sense of self under changing circumstances. It is something we invent - if one explanation we make for ourselves fails, we make another.

Allard-Poesi notes

“McGinn and Keros’s (2002) study shows that people engaged in dyadic transactions quickly coordinate a shared logic of exchange and that the level of cooperation of these improvisations (Weick, 1998) depends on the social ties (and therefore the related social identities) of the participants. ‘Friends’ nearly always improvise opening-up interactions and rely on a logic of full mutual honesty; ‘strangers’ adopt a similar logic in face-to-face communications, but their modal improvisation is ‘haggling’ in e-mail communication. Since social ties affect the understanding of what is appropriate behaviour in a seemingly straightforward transaction, interactions between strangers often lead to asymmetries: the two parties look at one another and the situation differently (one adopting cooperative behavior, whereas the other behaves in a less forthcoming manner), so that they are not able to understand each other. These interactions result either in an impasse or in inequalities in payoff” (p.172-3).

There are certainly asymmetries in the understandings of HQ and field staff, but not those of strangers (as most of the people who interact will know each other). Even though the Department of Disease Control is well organized and responsibilities are, in the main, well apportioned, when it comes to meetings or training, how does one ensure that everyone is on the same page and that all in the frontlines of a pandemic area agree with the decision or policies written by the administration? Does everyone agree? Even in Headquarters itself?

After reviewing all the interviews, the researcher noticed one-sided communication lacking reflection when the decisions had been made. There are a couple of examples that we can find,

such as P.10 saying “นโยบายถ้าเขาสั่งมาบางทีจิตใจเราจะฟังเหตุผลถ้าท่านอยากให้เราทำแต่สุดท้ายนโยบายที่ไม่ดีมันก็ตกไปเอง” (“Regarding policy, even if the orders are displeasing, we have to listen to them if that is what is wanted, but finally, if the policy is a bad one, it will fail on its own”), or P.19: “บางทีผู้ใหญ่สั่งอย่างช่วงซิก้าออกคำสั่งที่ขัดกับการทำงานของเราเราก็ชี้แจงและพยายามให้มันสอดคล้องกับความต้องการ ผู้บริหารก็จะเข้าใจถ้าเรามีเหตุผล” (“At times the poo yai will give orders that don’t fit with the way we work, such as during the Zika episode. We then need to give an explanation and try to bring things in line with what they want.” Note: *Poo yai* means roughly *bigwig(s)*.) The difference between P.10 and P.19 is the space between them and their respective *poo yai*. P.10 is from the epidemiology team, but P.19 is from the Headquarters risk communication team, and thus has a greater chance to talk with the administration team. In addition, her longer period of employment with the DDC has given her more privileges than someone who has to go work in the field and come back to report.

And so perhaps we now have the DDC’s asymmetries in answer to questions of sensemaking: not “friend”-”stranger”, but, following the cultural imperatives of the Thai bureaucracy, “insider”-”outsider”.

There are some signs that the researcher noted during her stay in Bangkok, however, that suggest a greater delegation of authority. Earlier in the decade, two senior staff spent time in Toronto to study crisis communication. In 2014, after the Ebola pandemic scare, the older style of war room headed by the Director or Vice Director was replaced by the EOC (Emergency Operations Center), which first saw use during the MERS-CoV pandemic. The EOC is distinguished by a variable size according to the severity of the outbreak, headed by an Incident Commander (IC) who is given the authority to handle the crisis under a clear framework established by a written directive specifying time limits, goals and desired actions. When the crisis starts to wind down, so too does the EOC, handing off its work to the regional centers. The topic never came up in conversation, but the researcher would not be surprised to hear that a lot of the EOC was based on the structure detailed in Duhamel (2009).

On top of cultural effects on the sense making of the whole organization, especially an organization that is well organized and controlled by policies and plans that are effective during normal situations, a crisis may shake up the collective interpretation that guides the actions of the organization, as noted by Allard-Poesi (2005, p.175):

“Although both the intersubjective and the generic dimensions rely on and constitute each other (e.g. Weick’s study of the Mann Gulch disaster, 1993b), they also continuously endanger each other in the organization, (e.g. Weick’s study of the Tenerife air disaster, 1990). When a situation is perceived as highly equivocal, intersubjective processes are liable to prevail. People will express different and sometimes divergent viewpoints. As people strive to reach an agreement, the expression of minority and dissenting views will activate complex influence processes, conflict and negotiation dynamics between participants (Doise and Moscovici, 1994) and divergent thinking (Nemeth, 1997). If the divergences do not stem from incompatible norms and values, the negotiations are liable to give rise to unique, innovative answers (Eisenhardt et al., 1997; Allard-Poesi, 2001). These answers may call into question the ‘social structure’ as presented and defended by the majority and may lead, temporarily at least, to less social order and more confusion.”

We may see an example of this in the creation of the EOC in 2014. The formation of this procedure was likely spurred on by the panic attending the Ebola scare. By contrast,

“If the situation is perceived as a ‘normal’, routine one, people will rely on assembly rules, procedures, instructions or recipes used in the organization to deal with the problem. They may not feel very committed to any particular position regarding the issue or, if they do, may censor themselves (either because they think the others agree with the dominant answer, or because formal procedures impede the expression of their divergent viewpoints; Doise and Moscovici, 1994). Generic subjectivity, taking in particular the form of the majority answer or of a compromise consensus to which nobody really adheres, will tend to prevail (Janis’s Groupthink), at the expense of innovative answers” (p.176).

We see a lot of this in the interview responses quoted above and in previous sections, in the form of statements such as P.3’s statement, “*I always made my decisions according to meeting results, and work according to DDC policy*” or P.16’s statement that “*we just communicate with external sources according to our orders, so there's nothing to do with decision making.*”

Thus, “If the intersubjectivity and generic subjectivity of sensemaking rely on and constitute each other, they may also deny and destroy each other (see Weick, 1990/2001: 116–17). These elements give rise to a complex, precariously balanced and highly tensional conception of collective sensemaking in organizations” (p.176).

The *intersubjective* dimension that Allard-Poesi discusses refers to the equivalent expectations and understandings that people build around matters of shared interest. These are not necessarily *identical* expectations and understandings, nor is this necessarily desirable (Weick, 1979, 1995, as cited in Allard-Poesi, 2005, p.174), but “Through discussion, groping, trial and error and sounding out, people share perceptions among themselves and gradually define or create meanings (Weick, 1995: 99) that enable them to agree on decisions and actions to undertake and thus to coordinate their actions.” (Allard-Poesi, 2005, p.174). The *generic* dimension consists of

“Interaction processes are shaped by language rules, by the vocabularies or frames that summarize past experiences and from which cues are extracted and made sensible, and by authority relations, work roles, norms and social structures that assign rights and weight to interpretations and help render those cues meaningful (Weick, 1993a: 22; 1995: 71). The micro-activities of sensemaking activate and re-enact both the society and the ‘organization’ within which the interactions are taking place. This articulation of micro and macro levels is not conceived as a simple, causal or determinist relationship. Shared goals, roles and the system that requires them (the organization) are created and give substance as people invoke them to justify a collective structure and their interdependent actions, and treat the organization as if it were real (Knorr-Cetina, 1981; Weick, 1993a). When those meanings are created and maintained in common scripts, vocabularies, symbols, habituated action patterns and generic routines, a generic subjectivity arises, allowing substitutability among people (Weick, 1995: 71, 74)” (Allard-Poesi, 2005, p.174-5).

To sum up this discussion, cultural matters, systematization and sensemaking can be primary factors in the breakdown of internal communication in the DDC. It was fortunate for the study that there was the chance to hold interviews despite the fact that a number of them were curtailed in duration due to the concurrent Rabies crisis. On the other hand, that crisis allowed for direct observation of the DDC at its work.

7. Conclusion

The success and survival of an organization in any type of situation depends on good internal communication. It ideally should be as P.18 said, “*Internal communication is like a paper cup phone: A talks to B, and B responds to A.*” However, this sort of simplicity is easier said than done. The question is how to ensure the flow of information to the people who need it and what strategy is required, especially in a time of confusion. Of course, it is also preferable if the information that is disseminated is understandable, useful and timely to the recipients. However, the socio-political and cultural environments also have their say in how information is disseminated: we’ve alluded to cultural factors throughout this paper, but there is certainly room for future studies on how these factors in specific affect internal crisis communication.

To sum up this research, the Department of Disease Control resembles a coin with two faces: the Department has knowledgeable specialists, is well organized, and has a strong networking system, but the strong cultural influences (notably of a collectivist tendency), the attendant hierarchical system, and occasional breakdowns of coordination and sensemaking (particularly in the field) during a crisis are troublesome, and can open gaps between the teams within the organization.

On the other hand, through observations made while auditing training sessions at the DDC, we noticed that the DDC has made a series of thoroughgoing innovations in response to Ebola and later crises, in the evolution of the war room to the EOC, with improved ability to circumvent information overload and invest specialists with sufficient authority to react to the pandemics. The EOC is supposed to be modular in that the branches are supposed to create their own as well to coordinate between HQ and the field. This change has not been rolled out entirely yet, and certain areas still tend to equate the EOC with the older war room concept. In some cases, manpower and workload considerations in the field operations are probably impeding the effort: we have P.7 stating (regarding the 2009 influenza epidemic) that “*We still didn’t have clear, comprehensible criteria; we had a system called “war room”. We still didn’t have the current EOC model. We still didn’t have the SAT (situational awareness teams) system, and, back then in the year of 2009, all investigative personnel came purely from the Bureau of Epidemiology. We*

had report that we were short of staff. They tried sending untrained personnel to help us.

Finding trained personnel isn't possible, because there is no systematic training to this day

(emphasis added).” P.7 does note that task division under the EOC system is clearer.

Our sample size is perhaps a little too small to be taken as anything but impressionistic, but the responses of personnel from outside Headquarters are consistent enough to suggest that their concerns about staffing, workload and input to Headquarters are not purely sour grapes.

However, as there are many branches and a number of ports of entry to cover, generally with smallish teams (5-8 in regional and provincial teams, roughly 10 people in the larger ports of entry), permanently beefing up the personnel would require a large chunk of the Department's budget, and is quite probably impractical. What *might* be feasible is to create a small “flying squad” specifically tasked to fill in when any given field team is swamped, and rotating to the various field offices to learn the local routines and meet the people during periods of calm. This may allow two birds to be killed with one stone: relieving workload pressure during crises, perhaps opening up more time for implementing the EOC and keeping up with paperwork; and acting as a liaison between HQ and the various field offices during normal rotation, that is, as a way for the field offices to send feedback to HQ. Under those circumstances, it would be wise if the *poo yai* were to cultivate the flying squad's input - the biggest problem we see here is the divide between the field and head office, and that may have ramifications for future crises.

Failing that, we would suggest sending some headquarters personnel to talk to and observe people in the field, with an understanding that there will be no reprisals or criticism, and to maintain regional and provincial risk training regularly, because, as P.2 stated, “*We need to be aware at all times. Our strategy is like a surveillance camera: we focus on diseases that affect humans and diseases that affect animals, but the main focus is still on humans. We have to monitor and follow up the cases...* “. The problem we encountered in the field may found to a less extreme extent in the Headquarters departments and teams. There is some tendency for the teams to act as information silos (with rigid communication channels and some bureaucratic tendency toward one-upmanship that wastes time) when more informal networking may allow the people with a genuine need for the information to get it more quickly. Informal lateral communication between teams that must coordinate seems indicated, and may well help foster a greater sense of the entire DDC as a team, and a greater sense of its mission. It may be that

lateral networks between personnel with coinciding interests can be formalized. This would differ from matrix management in that a “matrix organizes work through authority and is therefore principally based on management hierarchy. A formal network organizes work through mutual self-interest and is therefore principally based on collaboration” (Bryan, Matson & Weiss, 2007). This may avert some of the disadvantages of informal networks (which exist anyway in all but the smallest organizations), e.g., haphazardness, low signal-to-noise, lack of control, etc., and allow information to be shared quickly where it is needed.

The goals of this study have been essentially exploratory: to see how the Thai Department of Disease Control is structured and determine its strategies, and to see how these structures and strategies have worked in the cases under study. The study’s limits lie in the qualitative nature of the methodology, the limited sample size, and the truncated duration of a number of the interviews due to the researcher’s arrival in Bangkok coinciding with a major rabies outbreak – DDC personnel were quite rightly busy with handling the outbreak. This did, however, have the fortuitous outcome of allowing the researcher to observe the DDC in action during an outbreak.

According to the WHO (as noted in Section 5.5), the DDC does its job quite well, but there are areas where further research may be indicated, and may be of use in the field of internal crisis communication more generally:

- The research goals and methods of this study precluded in-depth research into the internal communication operation of the various field offices. As previously stated, the sample size was too small to be definitive, but the results we gathered are suggestive enough to warrant a thoroughgoing study of this area, with an eye toward improving integration of the outlying teams into the team as a whole. One expects that a certain amount of friction in communication between head office and the field is much more common than just in the DDC.
- It may be worthwhile to conduct a study on how to bring about greater flexibility in the internal communication channels during a crisis. The creation of the EOC system has made a big difference in trimming back information overload during a crisis, but we suspect that greater flexibility can be achieved between DDC teams that *must* coordinate with each other.

- A comparative study of the DDC and one or more similar governmental agencies in other countries that are involved with handling public health crises, with an emphasis on differences in strategies, organization and outcomes. As it is very unlikely that any one organization has a monopoly on good practices, such a study would likely be beneficial for *all* the involved organizations.

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Appendix A - The Department of Disease Control (Thai DDC)

A.1 Vision

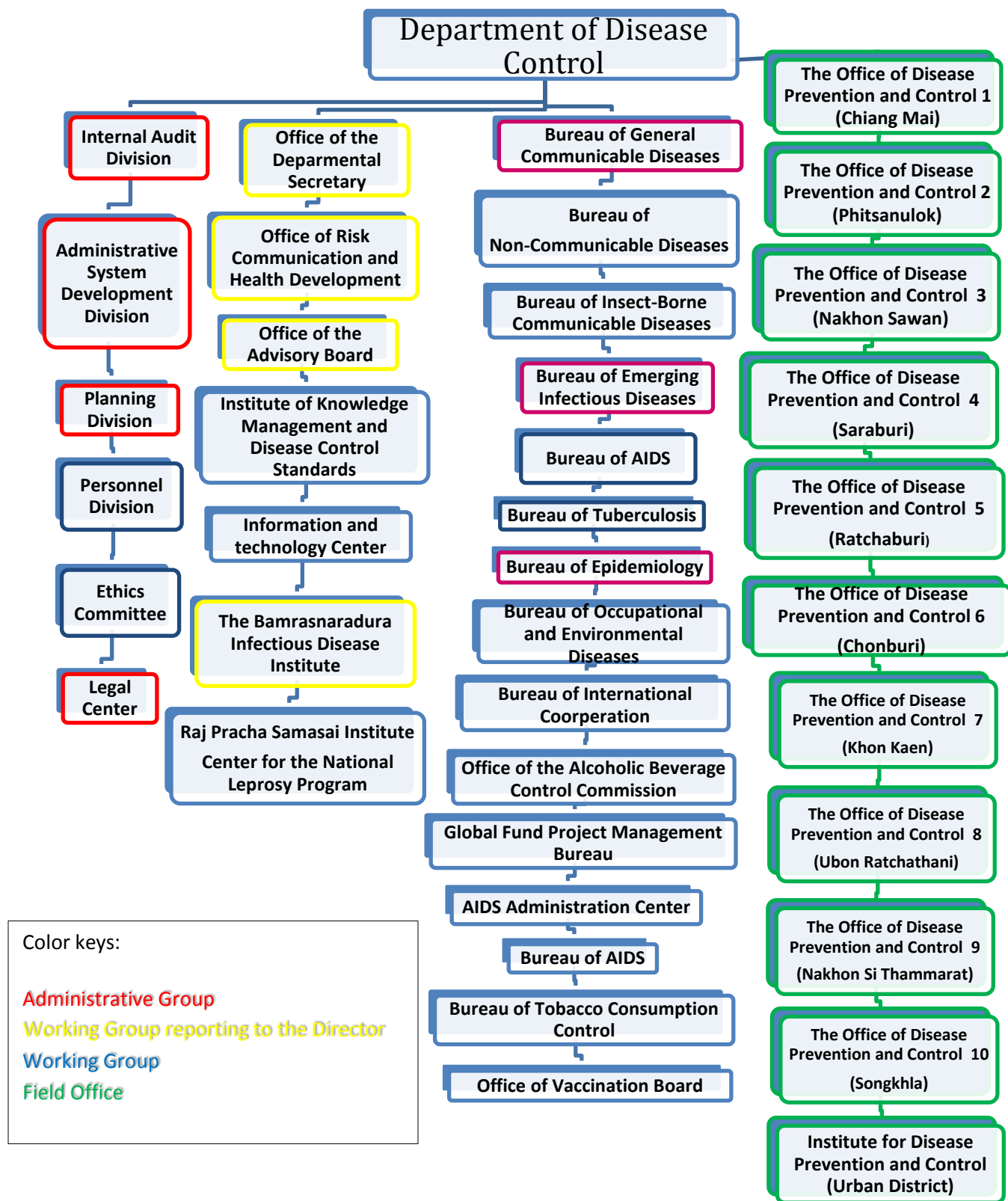
Citizens will receive disease prevention and control, and risk to health at an international level by 2036.

A.2 Mission

The mission of the Department of Disease Control, as specified in the ministerial order of 2009 allotting governmental services:

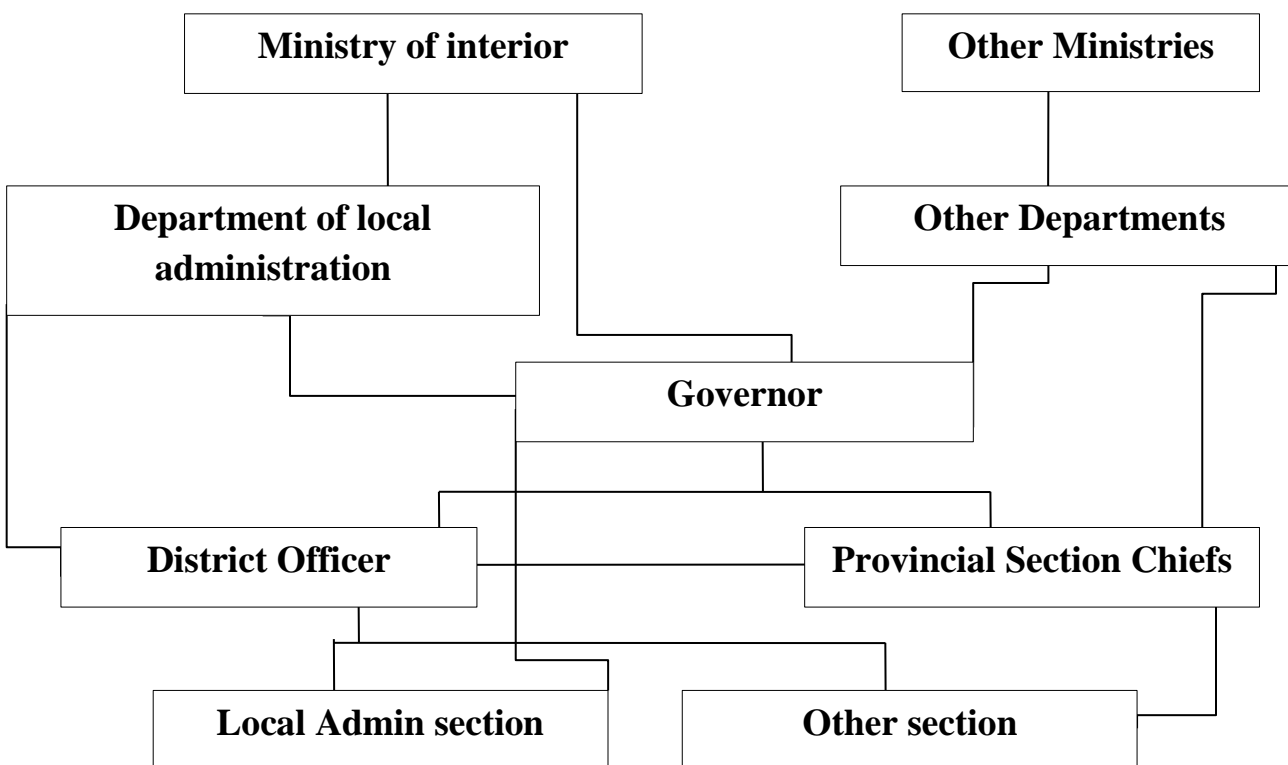
1. Development and collaboration with national and international stakeholders and networks and support responsible local agencies on the implementation of effective and sustainable prevention and control of diseases and health hazards.
2. Policy center through development of interventions, initiatives, technical references and standards for national surveillance, prevention and control of diseases and health hazards according to the international standards that are well accepted by stakeholders and the public.
3. Risk communication and public relations on prevention and control of diseases and health hazards effectively reaching all target populations.
4. Preparedness, prevention and prompt response to diseases and health hazards in emergencies as well as disasters based on local needs according to the international standards.
5. Monitoring and evaluation on overall performance of the national surveillance, prevention and control of diseases and health hazards according to the international standards.
6. Quality development on management of public organization and human resource to have competencies that meets international standards.

A.3 Organigram for the Thai Department of Disease Control



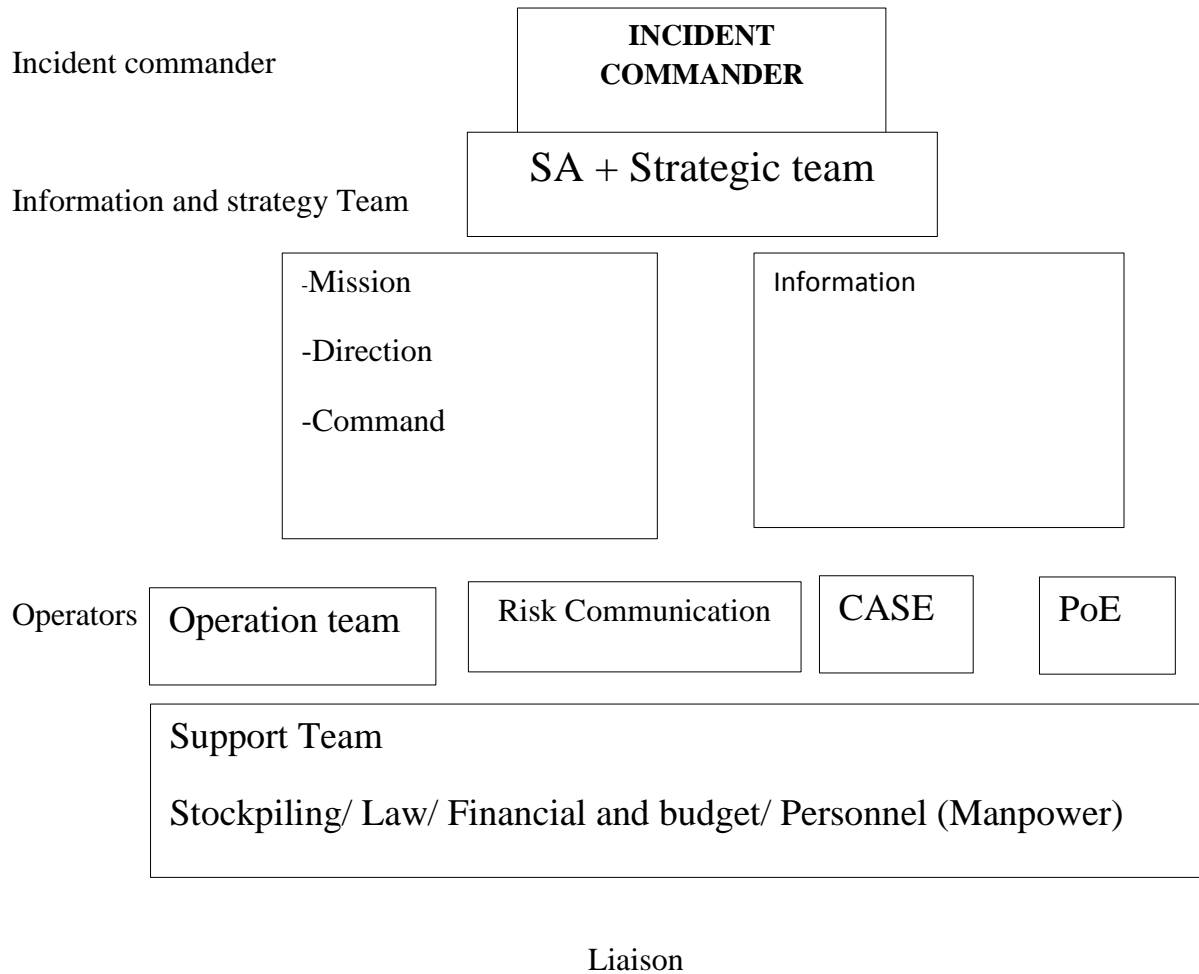
Appendix B - Simplified organizational chart of the territorial administration of Thailand

- Line of official administrative authority
- Line of informal authority and communication



Appendix C – Structure of the new Emergency Operation Centers

Emergency Operation Center (EOC)



Appendix D – Ethics documents

Appendix D.1 – Certificate of Ethics Approval

File Number: 01-18-04

Date (mm/dd/yyyy): 03/01/2018



Université d'Ottawa **University of Ottawa**
 Bureau d'éthique et d'intégrité de la recherche Office of Research Ethics and Integrity

Certificate of Ethics Approval

Social Science and Humanities REB

Principal Investigator / Supervisor / Co-investigator(s) / Student(s)

<u>First Name</u>	<u>Last Name</u>	<u>Affiliation</u>	<u>Role</u>
Sylvie	Grosjean	Arts / Communication	Supervisor
Parujce	Akarasewi	Arts / Communication	Student Researcher

File Number: 01-18-04

Type of Project: MA Research Paper

Title: An Exploration and Analysis of Internal Communication in the Thai Department of Disease Control during the H5N1 Influenza and MERS Pandemics

Approval Date (mm/dd/yyyy)	Expiry Date (mm/dd/yyyy)	Approval Type
03/01/2018	02/28/2019	Initial

Special Conditions / Comments:

N/A

File Number: 01-18-04

Date (mm/dd/yyyy): 03/01/2018



Université d'Ottawa **University of Ottawa**
 Bureau d'éthique et d'intégrité de la recherche Office of Research Ethics and Integrity

This is to confirm that the University of Ottawa Research Ethics Board identified above, which operates in accordance with the Tri-Council Policy Statement and other applicable laws and regulations in Ontario, has examined and approved the application for ethical approval for the above named research project as of the Ethics Approval Date indicated for the period above and subject to the conditions listed the section above entitled "Special Conditions / Comments".

During the course of the study the protocol may not be modified without prior written approval from the REB except when necessary to remove participants from immediate endangerment or when the modification(s) pertain to only administrative or logistical components of the study (e.g. change of telephone number). Investigators must also promptly alert the REB of any changes which increase the risk to participant(s), any changes which considerably affect the conduct of the project, all unanticipated and harmful events that occur, and new information that may negatively affect the conduct of the project and safety of the participant(s). Modifications to the project, information/consent documentation, and/or recruitment documentation, should be submitted to this office for approval using the "Modification to research project" form available at: <http://recherche.uottawa.ca/deontologie/submissions-and-reviews>.

Please submit an annual status report to the Protocol Officer 4 weeks before the above-referenced expiry date to either close the file or request a renewal of ethics approval. This document can be found at: <http://recherche.uottawa.ca/deontologie/submissions-and-reviews>.

If you have any questions, please do not hesitate to contact the Ethics Office at extension 5387 or by e-mail at: ethics@uOttawa.ca.

Germain Zongo
 Protocol Officer for Research Ethics
 For Dr. Barbara Graves, Chair of the Social Sciences and Humanities REB

Appendix D.2 – Information Letter, English



Information Letter for Study Participants

Dear _____,

My name is Parujee Akarasewi, and I am a researcher in the field of communication at the University of Ottawa. I am sending you this letter to inform you of a study that I wish to conduct with your collaboration as part of my Master's research. Please note that this research is independent of the Department of Disease Control, and refusal to participate will have no effect on your employment.

The purpose of this research is to study how internal communication functions during a catastrophe in a public health organization. Specifically, we seek to understand how organizational actors cope and communicate within the organization, with a focus on communicative practices that support such a process. To meet our goal of research, we have chosen a case study where we will analyze the responses of your organization to two pandemics.

Your participation in this study will be on a completely voluntary basis. You will be asked a series of questions during an interview that should take between 45 and 60 minutes. During the interview, which will be recorded (audio only), I will ask you questions about the internal and crisis communication.

It should be noted that this study is conducted entirely on a voluntary, anonymous and confidential basis. The data will be collected and analyzed, and no names will appear in the written versions of this study. Only my supervisor, Sylvie Grosjean (PhD) and I will have access to the list of participants and transcriptions. The data collected will be kept for 5 years in a safe manner at the University of Ottawa (specifically on a secure server at the University of Ottawa, and accessible only by a password).

If requested by the participants, I will set up a Skype meeting to communicate a summary of the research results after my defence of the paper. A summary of the results will be sent by email as well if requested.

Should you wish to participate, I ask you to answer me by e-mail ([REDACTED]), or by phone at

+1-██████████ (Canada) or (+66) ██████████ (Thailand). To ensure your privacy during participation, if contacting me by email, please use a private email account or personal phone.

In addition, I am available to answer all your questions. Please do not hesitate to contact me.

Thank you for your kind attention, your help is greatly appreciated.

Appendix D.3 – Consent Form, English

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Consent Form Interviews – Participants

Project title: A strategy for the Thai Department of Disease Control for use in internal communication in situations such as the MERS and influenza crises

Researcher:	Supervisor:
Parujee Akarasewi Researcher, MA Communication University of Ottawa Canada E-mail : ██████████	Sylvie Grosjean Full Professor University of Ottawa Department of Communication ██████████ Ottawa, Ontario K1N 6N5 Canada Tel: ██████████ E-mail : ██████████

Invitation to Participate: I am invited to participate in the above named research that is conducted by Parujee, a Master's degree student at the University of Ottawa, who works under the supervision of Sylvie Grosjean, Full Professor of the same university. I have been informed that this research is being conducted independently of the Department of Disease Control under the auspices of the University of Ottawa. Refusal to participate will have no effect on my employment.

Purpose of the study: *The researcher proposes to study specifically the responses to the recent MERS and H5N1 influenza pandemics to see if the Thai Department of Disease Control (DDC) has met with problems in its internal communication during these outbreaks, or, perhaps, found useful solutions that either arose from previous crises or in reaction to the cases under study.*

Participation: My participation will focus on answering a series of questions about the communication strategy and my understanding of it. The interview will last approximately 45-60 minutes and my answers will be recorded in audio format.

Risks: I understand that since my participation in this research implies that I give information on how I work and my understanding of the internal

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communication strategy in my daily work, it is possible that it may create some risk of discomfort, embarrassment or professional censure should I be publicly identified as the source of that information.

Moreover, because of the limited number of personnel within the Thai Department of Disease Control, there are risks that I may be recognized by my peers when reading the results of this study (e.g., I am the only person handling a task that is discussed during the course of the interview).

I have been assured by the researcher that everything will be done to minimize these risks:

- I may choose not to answer some questions of the researcher.
- I may at any time choose not to participate, and ask the researcher to erase any recorded data and/or destroy her notes so that no trace of what I have said or done is kept.
- I may at any point ask the researcher to suppress responses that may be personally identifying, such as discussion of tasks that only I could have done, discussion of events in which I was specifically involved, and so forth. In such cases, my responses will be considered as background to aid the researcher's analysis of the data, and may not be used in papers or conferences presented to the public.

Benefits: My participation in this research will give me the opportunity to reflect on my position regarding the internal communication strategy of the Thai Department of Disease Control, and will effectively promote organizational communication of the institution for which I work. In addition, by participating in this research, I contribute to knowledge and research in the fields of social sciences on the importance of communication for the elaboration of a strategy in crisis communication for the Thai Department of Disease Control.

Confidentiality and anonymity: It has been established by the researcher that the information I share with her will remain strictly confidential.

I expect that the content is only used for the presentation of research results at conferences or in scientific articles and by respecting the confidentiality. Data confidentiality is protected by the researcher and anonymity is guaranteed as follows:

In the transcripts of the interviews (audio recordings), the research participants are identified by codes (P1, P2, P3 and so forth) so that we cannot identify them. Anything that could identify a participant will be systematically erased and changed by a code. The identity of participants will never be revealed in publications or conferences.

Data Retention: Data collected (field notes, audio recordings of interviews) will be stored securely on a server specialized for the secure retention of data at

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the University of Ottawa for a period of 5 years. These data will be protected by a password that only the researcher knows. Paper data will be scanned, stored electronically for the 5 year period, and shredded after the transfer to storage by the company "Securit". This company specializes in the destruction of documents on the spot so that our confidential information remains confidential. Electronic data will be deleted from the computers of the researcher and the supervisor after they have finished the project, then the "Recycle Bin" will be emptied immediately. Data on the secure server will be deleted similarly after the 5 year period of retention.

Voluntary Participation: My participation in research is voluntary and I am free to withdraw at any time, and/or refuse to answer certain questions, without any negative consequences. If I choose to withdraw from the study, the data collected so far will be automatically destroyed by the researcher.

Acknowledgement: I, _____, agree to participate in this research led by Parujee Akarasewi, a researcher at the Master's level in the Department of Communication of the University of Ottawa.

I wish to review the transcripts of my discussions (interviews) with the researcher. I have been informed that transcripts will be delivered by hand at a time and place convenient to me.

I wish to receive a summary of the results of this research. These data will be sent via email and sent within one month after the defense of the thesis planned in the summer 2018.

I wish to participate in a meeting outlining the results of this research. If there is sufficient interest, this would take place via Skype within one month after the defense of the thesis planned in the summer 2018.

For additional information about this study, I can contact the researcher or her supervisor.

For information on the ethical aspects of this research, I can contact the Head of Research Ethics, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON, K1N 6N5 CANADA, +1 (613) 562-5387 or ethics@uottawa.ca.

There are two copies of the consent form, one of which is a copy that I can keep.

Participant Signature:

Date:

Researcher Signature:

Date:

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Appendix D.4 – Consent Form, Thai

ใบยินยอมเข้าร่วมการวิจัย
สัมภาษณ์ผู้เข้าร่วมการวิจัย

โครงการวิจัยเรื่อง:

กลยุทธ์การสื่อสารภายในองค์กรของกรมควบคุมโรคเพื่อตอบโต้สถานการณ์วิกฤตฉุกเฉินด้านสาธารณสุขกรณีโรคไข้หวัดใหญ่/นกและโรคเมอร์ส

ผู้วิจัย	อาจารย์ที่ปรึกษางานวิจัย
นางสาวภารุณี อัครเสวี นักวิจัย, ปริญญาโท สื่อสาร มหาวิทยาลัยออดตาวา ประเทศแคนาดา อีเมลล์: [REDACTED]	อาจารย์ชิลวี โกรธเมืองค์ อาจารย์ประจำ มหาวิทยาลัยออดตาวา ภาควิชาการสื่อสาร [REDACTED] ออดตาวา, เขตออนทารีโอ K1N 6N5 ประเทศแคนาดา โทร [REDACTED] อีเมลล์: [REDACTED]

คำเชิญเข้าร่วมการวิจัย: ข้าพเจ้า ได้รับการเชิญให้เข้าร่วมการสัมภาษณ์ในการศึกษานี้โดย นส. ภารุณี อัครเสวี นักศึกษา ป.โท มหาวิทยาลัยออดตาวา โดยมี อาจารย์ชิลวี โกรธเมืองค์ ซึ่งเป็น ศาสตราจารย์ประจำที่มหาวิทยาลัยเดียวกัน . เป็น ผู้ ก ำ กั บ ค ว บ ค ู ม ก า ร สึ ก ข า วิ จั ย . ข้าพเจ้าได้รับทราบข้อมูลแล้วว่าการศึกษานี้เป็นการศึกษาอิสระของนักศึกษาของมหาวิทยาลัย ซึ่งจะสัมภาษณ์เกี่ยวกับกรมควบคุมโรคของประเทศไทย ข้าพเจ้าอาจปฏิเสธการสัมภาษณ์นี้ได้โดยไม่มีผลกระทบใดๆต่อข้าพเจ้าเอง

จุดประสงค์การศึกษาวิจัย :
ผู้วิจัยเสนอการศึกษาวิจัยด้านการสื่อสารองค์กรเกี่ยวกับการตอบโต้สถานการณ์วิกฤตฉุกเฉินด้านสาธารณสุขกรณีไข้หวัดใหญ่/นกและโรคเมอร์ส ในระหว่างการตอบโต้ภาวะฉุกเฉิน ซึ่งอาจ หรือหากเป็นไปได้ ที่จะค้นพบการแก้ไขปัญหาที่เป็นประโยชน์ จากกรณีการตอบโต้ภาวะฉุกเฉินในครั้งที่ผ่านมา ในการศึกษานี้

การเข้าร่วมการสัมภาษณ์ การสัมภาษณ์นี้จะมีการสอบถาม เกี่ยวกับ กลยุทธ์การสื่อสารที่ได้ดำเนินการ ซึ่งข้าพเจ้าได้ทราบวัตถุประสงค์แล้ว การสัมภาษณ์อาจใช้เวลา 45-60

นาทีและข้าพเจ้ายินดีให้การสัมภาษณ์และการบันทึกข้อมูลดังกล่าว

ความเสี่ยง ข้าพเจ้าเข้าใจและทราบว่า การสัมภาษณ์นี้เกี่ยวกับ

ข้อมูลที่ข้าพเจ้าทำงานและเกี่ยวกับความเข้าใจของข้าพเจ้าด้านการสื่อสารที่นำมาปฏิบัติอยู่โดยทั่วไปในการทำงาน

คำถามอาจสร้างความไม่สะดวก ลำบากใจแก่ข้าพเจ้า หรือ การทบทวนทางวิชาการ ในฐานะแหล่งที่มาของข้อมูลได้

อีกประการหนึ่ง ด้วยเหตุที่กรมควบคุมโรคอาจมีบุคลากรไม่มาก จึงมีความเสี่ยงที่ผู้ร่วมงาน

อาจคาดเดาบุคคลได้หากได้อ่านรายงานการศึกษานี้ (เช่นในบางกรณีที่ ข้าพเจ้าเป็นเพียงบุคลากรไม่กี่คน

หรือคนเดียวที่ปฏิบัติหน้าที่ ที่เกี่ยวกับข้อคำถามการสัมภาษณ์นี้).

ข้าพเจ้าได้รับการ ยืนยันจากผู้ทำการศึกษา ที่จะพยายามทำทุกประการที่เป็นไปได้เพื่อลดความเสี่ยงดังกล่าว อย่างไรก็ตาม ข้าพเจ้า อาจเลือกการปฏิบัติบางเรื่องได้

- ข้าพเจ้าอาจเลือกไม่ตอบบางคำถามได้

- ข้าพเจ้า อาจขอออกจากการศึกษา ณ เวลาใดก็ได้ และอาจ ให้ผู้ศึกษา ลบ

ทำลายข้อมูลเพื่อไม่ให้มีหลักฐานที่เกี่ยวข้องกับข้าพเจ้าเก็บไว้ได้

- ข้าพเจ้า อาจระงับ ณ เวลาใดก็ได้ที่จะ "ไม่ให้มีการระบุถึงข้าพเจ้า เช่นงานที่ข้าพเจ้าเพียงผู้เดียวที่ได้ปฏิบัติ

หรือเหตุการณ์ที่ข้าพเจ้าเกี่ยวข้องจะเป็นการเฉพาะ หากมีกรณีเช่นนี้ ข้อมูลอาจใช้ช่วยผู้ทำการศึกษาเป็นฐานในการวิเคราะห์ เท่านั้น และไม่ระบุในเอกสารการศึกษาหรือ การนำเสนอในการประชุมต่อสาธารณะ

ข้อประโยชน์

การให้ข้อมูลของข้าพเจ้าในฐานะผู้ปฏิบัติหน้าที่ในด้านการสื่อสารภายใน ของหน่วยงาน

จะช่วยส่งเสริมพัฒนาการสื่อสารในสถาบันที่ข้าพเจ้าปฏิบัติงานอยู่ นอกจากนี้ ข้าพเจ้ามีส่วนในการสร้างความรู้

และการวิจัยในสาขา สังคมศาสตร์ คำการสื่อสาร โดยเฉพาะอย่างยิ่งในประเด็นการสื่อสารในภาวะวิกฤติของกรมควบคุมโรค ประเทศไทย

การรักษาความลับและการไม่ระบุบุคคล: ผู้วิจัยได้รับการยอมรับว่าข้อมูลที่ข้าพเจ้าให้เก็บความลับสุดยอด

ข้าพเจ้าหวังว่าเนื้อหาจะใช้สำหรับการนำเสนอผลการวิจัยในที่ประชุมหรือในบทความทางวิทยาศาสตร์เท่านั้นและโดยการเคารพใน ข้อมูลที่เป็นความลับได้รับความคุ้มครองโดยนักวิจัยและเคารพความเป็นส่วนตัว

ข้อมูลที่เป็นความลับได้รับความคุ้มครองโดยนักวิจัยและมีการเปิดเผยชื่อผู้ไม่ประสงค์ออกนามดังนี้

ในบันทึกการสัมภาษณ์ (การบันทึกเสียง) ผู้เข้าร่วมการวิจัยจะได้รับการระบุด้วยรหัส (P1, P2, P3 เป็นต้น)

เพื่อให้ไม่สามารถระบุตัวตนได้ สิ่งใดก็ตามที่สามารถระบุผู้เข้าร่วมจะถูกบดบังอย่างเป็นระบบและเปลี่ยนแปลงด้วยรหัส

เอกลักษณ์ของผู้เข้าร่วมจะไม่ถูกเปิดเผยในสิ่งตีพิมพ์หรือการประชุม

การเก็บรักษาข้อมูล: การเก็บข้อมูล (บันทึกเอกสาร, เทปบันทึกเสียง)

จะถูกจัดเก็บอย่างปลอดภัยบนเซิร์ฟเวอร์ที่มีความเชี่ยวชาญในการเก็บรักษาข้อมูลอย่างปลอดภัยที่มหาวิทยาลัยออตตาวาเป็นระยะเวลา 5 ปี ข้อมูลเหล่านี้จะได้รับการป้องกันด้วยรหัสผ่านที่นักวิจัยรู้เท่านั้น

ข้อมูลกระดาษจะได้รับการสแกนเก็บไว้เป็นระบบอิเล็กทรอนิกส์เป็นระยะเวลา 5

ปีและมีการหั่นย่อยหลังจากการโอนย้ายไปเก็บรักษาโดย บริษัท "Securit" บริษัท

นี้เชี่ยวชาญการทำลายเอกสารในจุดเพื่อให้ข้อมูลที่เป็นความลับของเรายังคงเป็นความลับ

ข้อมูลอิเล็กทรอนิกส์จะถูกลบออกจากคอมพิวเตอร์ของผู้วิจัยและหัวหน้างานหลังจากเสร็จสิ้นโครงการแล้ว "Recycle Bin"

จะถูกล้างออกทันที ข้อมูลบนเซิร์ฟเวอร์ที่ปลอดภัยจะถูกลบออกในทำนองเดียวกันหลังระยะเวลาเก็บรักษา 5 ปี

การสมัครใจเข้าร่วม: การมีส่วนร่วมในการวิจัยของข้าพเจ้าเป็นไปโดยสมัครใจและฉันมีอิสระในการถอนเมื่อใดก็ได้และ / หรือปฏิเสธที่จะตอบคำถามบางอย่าง โดยไม่มีผลเสียใด ๆ

หากข้าพเจ้าเลือกที่จะถอนตัวออกจากการศึกษาข้อมูลที่เก็บรวบรวมไว้จะถูกทำลายโดยอัตโนมัติโดยนักวิจัย.

การรับรู้และเข้าใจของข้าพเจ้า ข้าพเจ้า _____,

ลงนามในใบยินยอมที่จะเข้าร่วมการวิจัยนำโดยนางสาวภารุจี อัครเสวี นักวิจัยระดับปริญญาโท

คณะกรรมการสื่อสารแห่งมหาวิทยาลัยออตตาวา

ข้าพเจ้าต้องการทบทวนบทสนทนาของการสนทนาของข้าพเจ้า (การสัมภาษณ์) กับนักวิจัย

ข้าพเจ้าได้รับแจ้งว่าจะมีการจัดส่งเทปด้วยมือในเวลาและสถานที่ที่สะดวกสำหรับข้าพเจ้า.

ข้าพเจ้าต้องการได้รับสรุปผลการวิจัยนี้

ข้อมูลเหล่านี้จะถูกส่งทางอีเมลและส่งภายในหนึ่งเดือนหลังจากการป้องกันวิทยานิพนธ์ที่วางแผนไว้ในช่วงฤดูร้อน 2560

ข้าพเจ้าต้องการมีส่วนร่วมในการประชุมสรุปผลการวิจัยนี้ หากมีความสนใจเพียงพอก็จะเกิดขึ้นผ่าน Skype

ภายในหนึ่งเดือนหลังจากการอภิปรายวิทยานิพนธ์ที่วางแผนไว้ในฤดูร้อน 2018

สำหรับข้อมูลเพิ่มเติมเกี่ยวกับการวิจัยในครั้งนี้ ข้าพเจ้าสามารถติดต่อนักวิจัยหรืออาจารย์ที่ปรึกษาวิจัยได้

สำหรับข้อมูลเพิ่มเติมเกี่ยวกับจริยธรรมของการวิจัยข้าพเจ้าสามารถติดต่อหัวหน้าจริยธรรมวิจัย มหาวิทยาลัยออตตาวา ตึกประชุมทาบาวเร่ 550 ถนนคัมเบอร์แลนด์ ห้อง 154 ออตตาวา เขตออนทาร์โอ รหัสไปรษณีย์ K1N 6N5 ประเทศแคนาดา โทร +1 (613) 562-5387 หรือ อีเมลที่ ethics@uottawa.ca.

ใบยินยอมเข้าร่วมการวิจัยมี 2 ฉบับ ฉบับหนึ่งข้าพเจ้าเก็บรักษาไว้ ส่วนอีกฉบับหนึ่งผู้เข้าร่วมวิจัยเก็บไว้เป็นสำเนา

ลายมือชื่อผู้เข้าร่วมงานวิจัย:

วันที่:

ลายเซ็นนักวิจัย:

วันที่:

Appendix E – Interview responses (table)

Categories	Research Questions	P1.	P2.	P.3	P.4
Information about interviewee	How long have you been working for the DDC?	8 years	17 years (since 2002)	21 years (Since 1997)	10 years as a public health doctor in provincial public health under the Ministry of Public Health.
	What is your specialization?	Master in Public Health, Bachelor degree, M.D in Epidemiology	Epidemiology	Pediatrics.	Preventative medicine
	What is your position in DDC?	Director of the Department of Risk Communication	Emerging Infectious Disease: We are the ones who plan strategy for national responders, policy makers, academic development, agent training, and risk evaluation within the DDC.	DDC local district branch in Khon Kaen.	Deputy Director-General: control and supervise all pandemic management activities.
	Have you been involved in the response to any pandemics while working for the DDC?	H5N1 , MERS-CoV	All pandemics where the infections are transmitted from animals to humans, such as MERS-CoV, H5N1.	Influenza: long period of pandemic - H5N1	From the SARS outbreak until the present.
Part I					
Internal Communication	Did you receive any advance notification of the possibility of an outbreak?	We all work separately. Epidemiology handles their own responsibilities. They send SAT (Situational Awareness Team) news every	We need to be aware at all times. Our strategy is like a surveillance camera: we focus on diseases that affect humans	We check the ILI (influenza-like illness) rate. If it is continuously above 5-10%, we have to contact the provincial DDC, but if it remains there for	No, I will know when we have a meeting on it, along with the news from abroad. In the MERS case, the port of entry and the airlines

		<p>morning, passing on information about pandemic situations, so we wouldn't know in advance. Our team monitors news on outbreaks from both national and international news sources. We have meetings on Mondays.</p>	<p>and diseases that affect animals, but the main focus is still on humans. We have to monitor and follow up the cases, especially H5N1.</p>	<p>more than 1 week, we need to join the provincial team to work on the case.</p>	<p>notified me directly.</p>
	What was the source?	<p>SAT (Situation Awareness Team) = Epidemiology team</p>	<p>In this country, the information comes from the epidemiologist's report from the hospital, to the province, then to the DDC branch, and from the DDC branch to the DDC's central Department of Epidemiology for international pandemic information.</p>	<p>The ILI (influenza-like illness) results, and the definition of the disease from the DDC epidemiology manual.</p>	<p>Formal: team meeting. Informal: direct email, text and fax.</p>
	When and through what channel did you receive information about this specific outbreak?	<p>SAT NEWS every morning, media watch conferences once a week for my team, and video conference with the 12 DDC branches.</p>	<p>WHO news, the Ministry of Public Health website. All of it came from the soft clipping service we hired, and also through monitoring the hospital cases.</p>	<p>The Port of Entry for MERS-CoV, as well as the hospital.</p>	<p>As above.</p>
	How much discretion do you have for decisions about where you get the	<p>Anything that needs a decision regarding information needs to be taken up in</p>	<p>We normally share our information in the meeting, and bring back what we</p>	<p>The lab results for the ILI are trustworthy. Even though it takes a long time, it is certain. We also</p>	<p>My duty is to listen to all the information and plan what to do at the next step. Normally every</p>

	information you need to do your work, and how much and when to pass on to others, and to whom?	the EOC/war room meeting.	received from the meeting to create policy and plan our strategy.	receive some information from the DDC SAT (Situational Awareness Team) to help us in monitoring the situation. The SAT's information is useful to us.	team will be well prepared in the meetings.
	In a normal situation, who would expect you to pass on this information?	If it is a normal situation, not urgent, and one we can handle, we normally contact the responsible party directly.	We always write it up as a report and send it to the administrators.	In a normal situation, after we find a suspect, the hospital will report to us, and then the patient will be sent to a DDC-affiliate hospital under provincial DDC supervision if it can't be controlled by our regional DDC.	Director-General.
	Were the normal channels sufficient for dealing with outbreaks?	Enough because War room and EOC meeting is the principal channel	The system we have in war room is systematic enough. It is similar in every pandemic. What is different is the context of the disease.	We have meetings topic by topic. Our IC (Incident Commander) is the director of the branch. Our department has its own war room. If someone from outside wants to contact us, they can only contact our PR rep in the central war room.	Yes.
	How was the follow up and monitoring of the situation accomplished?	We accomplish the monitoring of the situation by polling our stakeholders outside the DDC, for instance, by taking a survey of citizens' understanding of the situation.	Done as rehearsed in our plan, which is always communicated in the meeting so as to cross-check what we know with other teams to	For monitoring and evaluation, we have an outsourced team of evaluators. This team also inspects and evaluates our work according to a measurement of citizen awareness	N/A

			develop a better national strategy.	and risk perception in order to hold us to a good standard, then they share the results with us to work out what needs to be fixed or improved.	
	Did you encounter any problems receiving information at that stage?	If we found any misunderstandings, we used our <i>(survey)</i> results to fix and develop our work.	N/A	Clearer case for this question is MERS and Ebola because they are new and have a risk of fatality in patients. That made the citizens panic. Also for H5N1, it affected citizens' work. People panicked more, so they hid more and were closed to outsiders, so it was hard for the team to get in to investigate.	No.
Part II					
Information and resources	What kind of information did you need to handle your job during the pandemic?	There are 2 principle kinds of information: 1.) hazard, i.e., how severe is it? Who is in our risk group? How we are going to protect them?; 2.) citizen awareness, i.e., is there anything that isn't scaring the public but scares us? What comments are people making? What are they talking about?	N/A	From the SAT, information and definition manuals for infectious diseases; new fact sheets from the Department of Transmissible Diseases; and key messages from the Risk Communication Department.	Information on prevention and protection.

	What would be the usual resources?	They can be divided into 3 principle resources: 1.) specialists - they always know before anyone else; 2.) village residents and our networks, such as the DDC branches; and 3.) the news media, when they ask about some illness and we go back to check.	News from the WHO and our ministry's website would be starting points to investigate.	SAT pandemic information, news, information from the outsource evaluation team.	Email, line text messengers, official meeting, fax, phone call.
	Were these resources reliable during the pandemic?	The specialists' information, because they are in direct contact with the incident commander for EOC/war room meetings.	N/A	We trust only reports and lab results that have been written up on a 506 form (<i>a specific form used only in the DDC</i>).	EOC meetings were.
	Who would have been dependent on you as an information resource?	Administrators, our PR people, the press, and DDC branches who need our key messages and talking points to develop their tools.	Administrators.	The Governor's inspectors, provincial public health officers, The Department of Livestock Development, sub-district administrations, municipalities, the Ministry of Public Health, our organization, DDC headquarters, other related departments - all paths both vertical and horizontal.	Director-General and affected departments.
	Were there any problems in providing accurate and timely	N/A	N/A	N/A	N/A

	information to these who depend on you?				
Part III					
Collaboration	Did you encounter any problems of communication specifically within your team during the outbreak?	Content and timing weren't that smooth, because the press works 24/7, and everyone can be a communication medium, thus our task was like a moving target, changing and fluid.	We have a stage for the exchange of information, which is the war room or EOC meeting. Sometimes we text each other. Relationships are important: if we don't know each other well, always go to the meeting. But in general, everyone has to report to their boss.	With a new disease, our work was rough. We were all scared when we heard about the first case of MERS-CoV in our province because we afraid to catch the disease ourselves. Because we are a branch team, there are frequent personnel transfers and changes, and they affect teamwork as well, especially with regards to technique.	Sometimes, they lacked information that was necessary for decision making, but that's rare.
	Were you on the same team during the outbreaks?	For Influenza and SARS, I was at the port of entry at Suvarnabhumi for a short time before I went to pursue my higher education. For MERS-CoV and H5N1, I worked with the risk communication team.	Yes, I was with this team since H5N1 until the current rabies outbreak...	Yes.	Yes, never changed position.
	What do you think your team handles well? A number of respondents took this as a question of	Currently it is much better in the Risk Communication Department, because we are collaborating well from the start now.	There is more communication than during normal situations, because normally we all	OK, not bad. <i>(sic)</i>	Yes, but they still need to be aware and collect data to cover every aspect. <i>(sic)</i>

	<i>whether their teams worked well. These responses are marked "(sic)".</i>		just handle our individual tasks.		
	Do you see anything that may cause teamwork problems during future outbreaks?	Speed. We need to work faster. Also individual skills need to be developed along the way, and we need more creativity in our work.	Communication. We need to talk more when we have something to say, not just fly off in different directions saying whatever we want.	When an outbreak arrives, the work on it is piled on top of our regular work, so the regular work that needs to be submitted to HQ can't be done and our productivity drops. On top of that, we run into financial problems because the crisis always happens at the time we lack funds, or at the end of September (<i>when the yearly budget needs to be returned to headquarters</i>) - we don't have our emergency funds. So for me, I'm okay about pay, but what about my team? We can't finish our work and we are tired. Imagine if festival weekend and the outbreak coincide - the ones who work on each are actually the same team, because we don't have that many people. So we all end up getting sick when we go in the actual pandemic area.	Communication - it needs to reach everyone equally.

Leadership	Were the orders and information you received from your superior during these outbreak cogent and meaningful?	No problem at all, because all communication passed through the EOC/ War room meeting.	Everything depends on familiar relationships. If you know your boss well, it isn't hard. It will flow.	We normally received our orders by fax, but as I told you, we don't have enough people. Sometimes we couldn't send our reports on time, plus Headquarters is always nagging for the results... The reason why it is slow is because we have to revise and verify.	Yes, the Director-General is aware, pays attention to every detail. He always attend the meetings if he has time.
	How much leeway did your superiors allow you to make decisions regarding communication with your stakeholders?	I support my fellows to think their own way, differently from each other, but in some cases, such as H5N1, the side effects were strong, and we needed to consult the official EOC or war room meeting first.	We argue with the administrators until we receive final decisions and conclusions. After that, no one can argue or talk about it anymore.	I always made my decisions according to meeting results, and work according to DDC policy.	If it is serious pandemic, we all need to come to a mutual agreement, but if it is just small issue, like one this morning where an ammonia substance leaked at a factory, I just called the Ministry of Industry cleared the issue myself.
	Did your superiors make a channel available for feedback?	Meetings.	Discussion after war room meetings when we still cannot end our arguments.	N/A	Yes, I can reflect on things and brief him about the meeting.
	Was any use made of cross-disciplinary or inter-bureau teams to formulate messages to be disseminated to DDC stakeholders?	We do. For example, in a previous case involving poisonous jellyfish, we integrated and expanded our knowledge by contacting a specialist from the Department of Fisheries.	Of course we do. We collaborate with researchers, universities, the Ministries of Forestry, Fisheries, and Finance, as well as other ministries.	Yes, during the H5N1 outbreak with the Department of Livestock Development.	Yes, the Ministry of Industry, Department of Livestock Development for H5N1.

	Were the information and messages you received from the top management consistent with what you were hearing at the bureau/team level?	Normally we received the same information, but sometime it does differ among the administrators, depending on the time the data has been collected.	We always hear from them in formal meetings, so no problem for that.	Not that different. It might be in the case of numbers: these numbers depend on when the data has been collected, so when we need to put out a press release or talk to the press, we have to put forward the same message as HQ.	N/A
Sensemaking	Were there any points during the outbreaks at which you felt the information you needed to do your job was incomplete or didn't make any sense?	There was no problem with the information for sense making, because it depends on the policy maker in the end.	N/A	Not really.	Because they didn't plan carefully when they collected data, some data was lacking and didn't cover what was needed.
	Were there any lessons from the outbreaks you have encountered that you were able to use when trying ascertain the big picture during other outbreaks?	N/A	The cover-up of information: some want to keep it private, others argue to make it public. Normally if an argument doesn't take place, a superior will take care of it.	We don't have enough people to work, so we have to foresee which DDC branch close to us can come to help us.	Never hide or cover up the data or reckless data collection that doesn't cover all the aspects.
	Do you see any potential problems that might make for difficulty in building a moment to moment understanding	We don't listen, never try to find an end to the discussions about the problem. Many times we got into endless discussions, so that nothing was	N/A	N/A	As above.

	of developing epidemics in the future?	resolved before we needed to wrap up a war room meeting. I might be someone in the team who tries to help bring the discussion to a close, but it doesn't cover the whole point, and that could affect the team and also the DDC. Don't rush: rhythm and timing cause more trouble than data or information.			
	What would you recommend be done about them?	We need to discuss and exchange more.	Always be prepared for anything that could happen. Don't wait until it does happen. Open eyes and ears to listen more and see more.	Always be prepared; exercise good time management, people management; need a crisis preparation plan A, and a plan B of which team can come to help us.	Communicate more amongst the team, and never hide or cover up the information. It won't help to make anything better.
	To what extent are you free to implement these changes on your own?	N/A	N/A	N/A	N/A
<i>Notes</i>					

Categories	Research Questions	P.5	P.6	P.7	P.8	P.9
Information about interviewee	How long have you been working for the DDC?	13 years with the DDC.	16 years (since 2003).	Since 1996 (as a student). After graduation, I dealt with waterborne	18 years (since 2000).	Since 1995-6.

				diseases, then leptospirosis, until 2008, when I took up duties at Suvarnabhumi.		
	What is your specialization?	Epidemiology	Epidemiology - investigator.	Epidemiology.	Veterinarian	Pediatrics.
	What is your position in DDC?	General communicable diseases.	Work in SAT (situation awareness team) monitoring	Outbreak cases: Influenza and SARS – Chief of port quarantine at Suvarnabhumi International Airport; MERS-CoV - Chief of international transmitted infectious disease mission.	Epidemiologist -Head of section for diseases transmissible from animals to humans.	Full time doctor at Bamrasnaradura Infectious Diseases Hospital.
	Have you been involved in the response to any pandemics while working for the DDC?	H5N1 - Supplied vaccines and medicine to the epidemiology team and hospitals.	H5N1 influenza, SARS and MERS	As above.	In all the cases, including rabies.	SARS, MERS-CoV, H5N1, influenza. (Also anthrax and AIDS.)
Part I						
Internal Communication	Did you receive any advance notification of the possibility of an outbreak?	I will know after a SAT meeting from an epidemiology report created for the DDC in the meeting.	We got warning from our networks, such as the CDC (USA), WHO, EU agencies.	No.	When it exceeds the ILI threshold, and also when the Livestock Department network contacts us.	N/A
	What was the source?	The SAT database, Epidemiology Department report, data from affected ministries, such as the Ministry of Religions (MERS-CoV, Yellow fever), or the Department of Livestock	Us... My team and the hospitals, community and public health volunteer nurses and doctors.	<i>(In general)</i> we know once the orders come by fax from headquarters. Our screening must be brought in line with the results of a meeting of the		N/A

		Development (H5N1).		headquarters war room.		
	When and through what channel did you receive information about this specific outbreak?	Email, letters, memo loop, meeting invitations, written orders.	Email and phone calls, the text line application, websites, social networks.	(See above.)	Email and text, but now we have the Line application.	N/A
	How much discretion do you have for decisions about where you get the information you need to do your work, and how much and when to pass on to others, and to whom?	Enough.	Enough for us to work on the investigations.	It is one-way communication, just report the data. We almost have no time. We have to follow up on the list of officers (<i>work schedule</i>) ourselves with our chief of administration. The war room? We can almost never attend. We never know what we'll encounter in our work.		As an administrator, I am both a source of information and the one who sets the standards. I have to believe that everyone is an information source, consequently everyone everywhere has to receive the same information, because often a reporter or member of the general public might ask an employee: if that person is informed by social media and frightened, it will make our work much tougher. So the point of opening the war room is to update the situation, establishing an awareness of the information

						to get everyone on the same page as to which information can be made public and which cannot. But all in all, we have no policy to hide or suppress the news. If we need to make an official statement, we have to arrange for the person holding responsibility to give the interview, and work together to draft the news coming from the Department.
	In a normal situation, who would expect you to pass on this information?	Affected ministries, DDC branches, field workers, international agents, port of entry.	All affected departments. We send out email every morning to update info to every team, DDC branch and administrator.	N/A		The employee writing the report. In the case of quarantine station, when we have an ill patient, we make a report and send the dossier back to the Department.
	Were the normal channels sufficient for dealing with outbreaks?	Yes.	Yes.	N/A		N/A
	How was the follow up and	N/A	N/A	If there were any problems,	Assessment at 3 levels each	Sometimes I am called into a

	monitoring of the situation accomplished?			we had to report back to the Department, and the Department would reply to us.	week. We have the SAT team review the information to assess the risk regarding the transmission to humans and animals, who the target group is. We have teams that we assign in different cases.	meeting with the Department, which I'll attend to share information at the war room meeting with those monitoring the outbreak.
	Did you encounter any problems receiving information at that stage?	No, I get good collaboration from everyone.	In H5N1, It affect to economic and social. Citizen scared and panic some patient covered up because they don't want their sickness to affect their business.	N/A	Duplication of investigative work with other ministries - it makes patients feel uncomfortable and unwilling to share information.	N/A
Part II						
Information and resources	What kind of information did you need to handle your job during the pandemic?	N/A	ILI (influenza-like illness) rate from the lab, and news from the WHO, CDC and our networks abroad; hospital/doctor's reports.		Lab results, all news from the WHO and our investigation team, connections to other ministries.	N/A
	What would be the usual resources?	N/A	Lab results, and information from hospitals, the internet and our networking.	We just handled the search for data ourselves. Sometimes Dr. XXX helped. A clerk, Mr. YYY, would stay at the quarantine station all day, and sleep in the	Case files and news from outside the DDC.	

				meeting room to gather all the data and present it to us every morning at 7 AM. He also got the data from Customs and Immigration.		
	Were these resources reliable during the pandemic?	SAT information, and EOC or war room meeting results.	Yes.	N/A	Yes.	N/A
	Who would have been dependent on you as an information resource?	Affected ministries, DDC branches, field workers, international agents, port of entry.	Everyone. We collected it (<i>all the information</i>) into our own database.	N/A	Public health agencies, EID, risk communication and other involved departments.	HQ war room, team, patients.
	Were there any problems in providing accurate and timely information to those who depend on you?	N/A	We have a lack of agents to do the work. For instance, during the influenza outbreak, we had more patients than our team could monitor and handle, so we had to ask other teams to help us.	Currently we're only keeping up with the routine work.	The lab is clear, our team is clear, we know our duty.	N/A
Part III						
Collaboration	Did you encounter any problems of communication specifically within your team during the outbreak?	I give them 9/10. They work well, but they don't work 24/7. Sometimes an emergency arises at 11 PM, and they don't respond, so I have to take care of it myself.	No, because we brief before starting our mission.	Communication was intermittent. We didn't receive a clear list of personnel on duty, so we had to check each day to see who showed up, especially	No, we have clearly divided our responsibilities.	(<i>During the SARS outbreak</i>), the doctors and nurses were frightened. As the number of patients increased and the disease spread, our personnel

				<p>the doctors and drivers. There was a problem with them showing up late, so that the patients might have to wait. Technical problems like the protests caused the ambulances to arrive late.</p>	<p>started to become afraid, and panic to the point where they were unwilling to enter the patients' rooms. After I brought my team to a better understanding of the disease, anxiety and fear subsided until the case of the MERS-CoV epidemic originating in China and Hong Kong. It happened so fast, not even overnight, that I received notice about the arrival of Dr. Urbani, who was suspected of being infected with MERS (<i>sic</i> - Dr. Urbani was the researcher who identified SARS, and died of it in Bangkok), at 4 PM, and I received orders to be the incident commander for this case. The preparation time was tight: even though our team has discussed it, we</p>
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						were still not ready. Once the doctor was transferred to us around 10 PM, the team nurse and the doctors from the X-ray room team came out and asked me why I didn't tell them that he was ill with this disease, otherwise they wouldn't have entered. None of the team's doctors had time to prepare our minds. There was less panic for H5N1 and influenza.
	Were you on the same team during the outbreaks?	Yes, never changed position after transferring to work here at the DDC.	yes, I just moved to be a director for department of insect infectious disease for Zika case	No. (<i>See above in Personal Information.</i>)	Yes, I have never moved.	Yes.
	What do you think your team handles well? A number of respondents took this as a question of whether their teams worked well. These responses are marked "(sic)".	Yes, but as I said, they can't be contacted 24/7, so I have to handle the monitoring myself. (<i>sic</i>)	Not really. I'd give 6/10. We don't have problems in communication, but what we have is our burden and our mission. We are overloaded with work, even though the DDC is recruiting more people to help us. But our regular mission	Internal communication in our group was fine because we all knew what we had to do after the meeting before the start of the day's work.	We collaborate well, and we divide our work clearly before going into the area.	N/A

			<p>still needs to be done. Sometime we have to go onsite to investigate, but we need money for transportation for the team... so we need to make a request from the financial department. As you know, the financial department always makes like a crisis can wait, so we end up paying out of our own pockets first, then being reimbursed a few weeks later after the job is done or we have to go to another site. <i>(sic)</i></p>			
	<p>Do you see anything that may cause teamwork problems during future outbreaks?</p>	<p>My team and I are not in the frontlines, like port of entry or the DDC branch operations. We don't have any problems in the team.</p>	<p>DDC policy during a crisis: I want them to have us work and feel that we have a choice not to do so, voluntarily rather under obligation. I have to go on meetings all the time, I also have to work in the field. I want the DDC to clean up the patronage system completely. I</p>	<p>Many times we caught the flu at work ourselves because we were obliged to be on duty 24 hours without break, even during holiday season, and, what's more, departmental cost cutting policies didn't allow medical workers to wear at least N.95 (masks);</p>	<p>No</p>	<p>Regarding SARS, because I will always be immersed in the real situation and have to follow up all the work myself, I have to make my own decisions incisively, quickly and accurately, knowing the right information. It's important to be conscious of</p>

			<p>want to stop the pattern of processes in the financial department. I'm a doctor, I'm fine, but the ones who have to follow me, they'll die for sure if they need to spend lots of money.</p>	<p>they just gave us simple hygienic face masks to wear. In the end, I got sick myself and only got a bouquet of flowers from the Director-General. No one takes any note of this until things go wrong, and then the television crews come in to aggravate matters. The operation at Suvarnabhumi was still inconsistent. We still didn't have clear, comprehensible criteria; we had a system called "war room". We still didn't have the current EOC model. We still didn't have the SAT (situational awareness teams) system, and, back then in the year of 2009, all investigative personnel came purely from the Bureau of Epidemiology. We had report that we were</p>	<p>this, because fear happens to everyone, not just patients but the team as well. However, for MERS and other pandemics, we have the DDC team to help come to a decision, because it is the case that is important.</p>
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				short of staff. They tried sending untrained personnel to help us. Finding trained personnel isn't possible, because there is no systematic training to this day.		
Leadership	Were the orders and information you received from your superior during these outbreak cogent and meaningful?			N/A		N/A
	How much leeway did your superiors allow you to make decisions regarding communication with your stakeholders?	Of course they all respect me, if we are clear and reasonable.	No, they like only when we report back in a paper.	N/A	In a governmental and bureaucratic system, we have to respect the Incident command chain. Sometimes we have the media show up, but we have to send to the incident commander or my boss. We keep track.	N/A
	Did your superiors make a channel available for feedback?	Yes, I can use the text line app directly, and can phone.	N/A	N/A		N/A
	Was any use made of cross-	The Ministry of Public Health, and	The Ministry of Public Health,	N/A		N/A

	disciplinary or inter-bureau teams to formulate messages to be disseminated to DDC stakeholders?	the Department of Livestock Development.	departments related to animal husbandry and industry.			
	Were the information and messages you received from the top management consistent with what you were hearing at the bureau/team level?	Yes.	Normally it is all about time when the data has been collected. We need to set the official numerical data.	N/A	No, we are the first resource for them.	There is none (<i>conflicting information</i>). We have only the irritation we feel primarily because of performing our jobs within a bureaucratic system. We have to attain a high position so that we have the chance to learn. We have to let our team know whichever policies come down to us. We cannot do anything contrary to departmental policy even though we are in a situation. What we can do is to do our best to work in conformance with our orders in order to keep the team going – that’s the most important thing.
Sensemaking	Were there any points during the outbreaks	No, again we just prepare the	During the H5N1 outbreak, the admins asked us	No, because the thermo-scan sounds the		No other disease caused as much

	at which you felt the information you needed to do your job was incomplete or didn't make any sense?	medicine and vaccines.	to cover up some pandemic issues to the citizens in an area. That irritated me while working in the area. Once it (<i>the outbreak</i>) started to become more severe, i decided to tell.	alarm very clearly.		confusion as Ebola. We were prepared, but not at 100% readiness. Our work often came to a standstill because we experienced an unclear sense of the data. 100% of our personnel were in terror
	Were there any lessons from the outbreaks you have encountered that you were able to use when trying ascertain the big picture during other outbreaks?	The transition of workers can cause miscommunication.	As above.	N/A	Of course, during the investigation, H5N1 stood out the most. I worked as PI (Principle investigator), even though I could not issue commands and had to follow the system.	The initiative to develop more plans for the preparation of personnel and patient care rooms comes from the lessons of the SARS outbreak. Because of this, I was appointed vice director and served as incident commander. The lesson we learned from this was that neither our patient reception room nor our lab was well-prepared, consequently we had to improve our ward, changing it into a sterile room.
	Do you see any potential problems that might make for	As above.	As above.	N/A	Confusion in the team. When I did an investigation	See above regarding fear.

	difficulty in building a moment to moment understanding of developing epidemics in the future?				with the Livestock Department, we duplicated our work, and it made patients feel uncomfortable.	
	What would you recommend be done about them?	N/A	As above.	We want people who arrive to become part of the team, or to be people who have been part of the team. We want to have meetings that let our port people describe events and tell you what happened. To increase the staff, we need more specialists, more doctors, and more personnel who know how to work hard.	That we make an agreement to discuss and investigate incidents together.	I have done risk communication training with the CDC in the USA, which is why I'm aware of the importance of risk communication for people in an organization. We need to make people in the organization aware of the importance of risk communication in normal circumstances and also during a crisis by making arrangements for Pre/Crisis/Post conditions.
	To what extent are you free to implement these changes on your own?	N/A	N/A	N/A	N/A	N/A
Notes				<i>This turned into a very informal interview, mainly concerned with the Port</i>	<i>Short interview due to a meeting for the epidemiology team on rabies that took place</i>	<i>Short interview.</i>

				<i>operation at Suvarnabhumi airport.</i>	<i>shortly afterwards.</i>	
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Categories	Research Questions	P.10	P.11	P.12	P.13	P.14
Information about interviewee	How long have you been working for the DDC?	15 years (2003).	19 years (2001).	Since 1997.	Joined the Ministry of Public Health in 1989, then became a provincial public relations spokesperson in 1990.	Since 1986 in public relations at DDC branch level.
	What is your specialization?	Epidemiology	Community health, public health program.	Public health.	Mass communication.	Public health.
	What is your position in DDC?	HIV vaccine lab for 7 years, AIDS/TB investigator for 7 years and 6 month before moving here.	Public relations in the Nong Khai area since the start of the "30 baht" policy (<i>\$1 fees for medical consultations and procedures, i.e., universal healthcare</i>).	Just promoted to be the head of risk communication.	Public relations, TV and media news monitoring.	Public relations, TV and media monitoring.
	Have you been involved in the response to any pandemics while working for the DDC?	MERS-CoV (1st case after moving), influenza and SARS.	MERS-CoV, H5N1 and Influenza	All (as an agent in the risk communication team).	All of them.	All of them.
Part I						
Internal Communication	Did you receive any advance notification of the possibility of an outbreak?	We monitored all pandemics 24/7 and compared the information with SD.	Warnings from DDC headquarters.	My team is the source, because we have to ascertain the indications of pandemic: 1) crisis?; 2) controllable or not?; and 3) severity? Then	Press releases, warning announcements, newspapers, TV media networks.	My boss will join the meeting at DDC headquarters, then she will set up a meeting with the team.

				we'll have a PHEO meeting (war room).		
	What was the source?		Data from DDC HQ, such as statistics of transmission.	News from the WHO website, SRRT from the SAT team (pandemic statistics), news and key messages from the Risk Communication Department at DDC headquarters.	Every ministry involved, such as the Livestock Department, Ministry of Transport, Ministry of Religion, etc.	SRRT reports, policy statements and key messages made by DDC officials.
	When and through what channel did you receive information about this specific outbreak?		War room team meetings - my team got data from my boss, orders, official written directives, public health volunteers, emails, messengers, texting, and so forth.	Transmission of data from the SRRT (<i>from SAT = epidemiology team</i>) to the subdistrict, to the district, thence to the region and then DDC headquarters. That is how we send the data, and data returns along that path as well.	Media networks, the DDC, the public relations network if each ministry affected by the pandemic, feedback from citizens.	I got it from my team meeting plus a video conference with DDC headquarters.
	How much discretion do you have for decisions about where you get the information you need to do your work, and how much and when to pass on to others, and to whom?		If there is no problem after our work is done, our information is good enough for our team to make a decision.	I don't think data is a problem - we are more concerned about our team being unready.	We don't really make decisions on the process. We only make decisions on what we will communicate to the citizens.	We are the ones who analyze the data, so we basically see how big the problem is and how fast it can spread to other people. We have to pass on our data to the group that takes care of news writers and

						provincial announcers.
	In a normal situation, who would expect you to pass on this information?			My team has to simplify data to pass on to the pandemic area workers, provincial public relations, our network and provincial public health.	we pass on our information to DDC, ministry local public health, citizen	As above.
	Were the normal channels sufficient for dealing with outbreaks?	Yes	Yes. We also have our own radio channel and network along the border, also yearly meetings with the press and public health teams from the Republic of Laos.	N/A	Yes.	We have media networks.
	How was the follow up and monitoring of the situation accomplished?		We have the war room. If there are no further problems, our team has done its work well.	War room. As I said, though, we lack the means to check our citizens' awareness. My team is not ready.	Yes. (<i>sic</i>)	We have our own team to monitor and measure public awareness after we make announcements, publish news or broadcast on air.
	Did you encounter any problems receiving information at that stage?		N/A	Receiving data and information is direct, so the only problem we do have is that our data does not cover the people's reaction and awareness and response.	Not really. We had good participation from everyone, even the villagers.	No.
Part II						

Information and resources	What kind of information did you need to handle your job during the pandemic?		Statistics of pandemics, the DDC's database.	Pandemic statistics, information from the WHO and the DDC's database, and SRRT (SAT team).	Information from people who contacted local hospitals, public health volunteers and the DDC.	The disease's speed and severity of transmission to other humans.
	What would be the usual resources?		All pertinent information from the DDC.	Info from the DDC.	Information from local villagers and the DDC.	Info from the DDC, directives and announcements.
	Were these resources reliable during the pandemic?		Yes.	Yes, but sometimes not enough or slow, so we have to adapt the information from the WHO website.	Yes if there's proof from a lab or something similar to the DDC's data.	Yes.
	Who would have been dependent on you as an information resource?		Local medical workers and citizens, public health volunteers.	Hospitals, people who work in the pandemic area, provincial public relations, our network, provincial public health departments.	The risk communication department, the DDC, the Ministry of Public Health, and citizens.	Newswriters, announcers, media relations teams.
	Were there any problems in providing accurate and timely information to these who depend on you?		N/A	Yes, but not covering all the data we need to use in the team.	N/A	N/A
Part III						
Collaboration	Did you encounter any problems of communication specifically within your		No, we always make sure we're right, then produce the first risk communications.	Too panicked sometimes, which affects our ability to pass our message to citizens with	Not at all. Our team communicated well and has been working together for a long time.	Not really. We always communicate with our boss, we are open.

	team during the outbreak?			the right information. We rush our communication too much, which hurts the DDC's image.		
	Were you on the same team during the outbreaks?		Yes.	Yes.	Yes.	Yes.
	What do you think your team handles well? <i>A number of respondents took this as a question of whether their teams worked well. These responses are marked "(sic)".</i>		In our team? 8/10 - we handle our work well. (sic)	I'd give 6/10. We were too rushed at that time. Our team was not ready, and we lacked data that the team needed, such as awareness among citizens. (sic)	9/10. (sic) We take care in details, and work collaboratively.	Hmm... I would give 8/10 though, because I personally think we have good collaboration within the team and work together as a team. (sic)
	Do you see anything that may cause teamwork problems during future outbreaks?		But again I can't give everyone 10/10, because they are still slow and cover up the data, so that I have to follow up and nag them until I get the data.	Speed of communication - we always make mistakes when we communicate too fast. Sometimes we panicked too much.	N/A	N/A
Leadership	Were the orders and information you received from your superior during these outbreak cogent and meaningful?		Yes, sometimes the director comes to visit us himself to see how we work.	As previously noted.	N/A	
	How much leeway did your superiors allow you to make decisions		Only what my duty allows me to do, such as deal with some of the media or	I worked according to my role at that time, but all in all I had to	N/A	No, I have never made any such decisions, because I have to report every

	regarding communication with your stakeholders?		supervise the team when the supervisor is not there.	respect the organizational levels.		serious issue to my director.
	Did your superiors make a channel available for feedback?		Yes, we talk in person all the time.	N/A	N/A	N/A
	Was any use made of cross-disciplinary or inter-bureau teams to formulate messages to be disseminated to DDC stakeholders?		Yes, with the Department of Livestock.	No, all we could do is to adapt data from the WHO website.	We have networks with every ministry involved, so that the information can always be integrated.	Only in some cases - we do have video conferences with the Ministry of Livestock (<i>at branch level</i>).
	Were the information and messages you received from the top management consistent with what you were hearing at the bureau/team level?		There's no problem with the data.	Sometimes if my team is too fast, we don't get the whole message, but if we wait for the right information, it means that we are slow.	Sometimes they are different. That is why we always double check with the DDC branch and local hospitals handling the cases in the pandemic area.	Yes, that's normal. That is why we have to double check on the pandemic area. In the end, we have to use DDC official information as primary data.
Sensemaking	Were there any points during the outbreaks at which you felt the information you needed to do your job was incomplete or didn't make any sense?			Speed always causes errors in communication.	No.	N/A
	Were there any lessons from the outbreaks you have encountered			N/A	N/A	N/A

	that you were able to use when trying ascertain the big picture during other outbreaks?					
	Do you see any potential problems that might make for difficulty in building a moment to moment understanding of developing epidemics in the future?		Whoever passes on news (<i>to the public</i>) needs to be responsible for what they say. During the Zika outbreak, the ex-Director of a DDC district branch passed on information without the team's agreement, because the pandemic area was between 2 provinces. So he talked to the press, and made an announcement that citizens should not enter the area and pregnant woman were prohibited from entering. That created a lot of confusion and a bad reputation for the DDC.	Speed and panic in the team cause problems in teamwork.	N/A	A new disease with a lack of personnel to handle it. We were not clear on work allocations during the outbreaks. Sometimes late-arriving data forced us to find the information out for ourselves.
	What would you recommend be done about them?		When you know anything, speak; if you have any ideas, speak. Don't hide it. If you want to announce something to the	We need to slow down, remain calm and stop panicking. We need to cover the data in all aspects and get	We always work collaboratively with our networks, so we just need to prepare more and work together more,	As above, so we need more people, and the allocation of work tasks will be resolved after we develop the

			public, you need to be responsible for your word.	it right all the time.	not just during pandemics.	emergency operation center system.
	To what extent are you free to implement these changes on your own?		N/A	N/A	N/A	N/A
<i>Notes</i>						

Categories	Research Questions	P.15	P.16	P.17	P.18
Information about interviewee	How long have you been working for the DDC?	13 years.	8 years for the DDC. Before that, I worked for the Office of the Permanent Secretary of the Ministry of Public Health.	Joined the government in 1988, joined the DDC in 2010.	~ 13 years or longer.
	What is your specialization?	Internal medicine.	Health protection.	Epidemiology, health protection, MBA.	Management and public health.
	What is your position in DDC?	One of personnel in the risk communication team.	One of personnel in the risk communication team.	Director of the DDC.	Specialist during H5N1, developing the strategic plan and national plan and policy, and I moved to work with the risk communication team as team manager during MERS-CoV, Zika and influenza (at the time internal communication was divided into two teams, the Secretariat and the risk communication team).

	Have you been involved in the response to any pandemics while working for the DDC?	All 3 cases.	I experienced 3 of them.	All 3 cases.	All 3 cases <i>(due to the fact that she has worked in the DDC the longest of all the participants in the group. so she knows a lot).</i>
Part I					
Internal Communication	Did you receive any advance notification of the possibility of an outbreak?	We know from all the data presented at the team meeting: 1) SAT (SRRT data); 2) directives from DDC officials; 3) Policy statements and directives from the Ministry; 4) specific departments contacting my director.	We received information from DDC officials, the SAT's SRRT, speculation using the data we have on the pandemic, and the WHO website.	Influenza: It is seasonal disease. We look at the number of patients, whether it is greater than before, with unusual events like a death toll, and whether it is happening to clusters of people, like prisoners in jail, soldiers in camp or students in school. These can help us speculate what might happen afterward. H5N1: The exchange of information between the Ministry of Livestock / Ministry of Forestry and the DDC (the One Health concept), combined with reports of dead fowl alongside stories of victims touching dead animals, and international pandemic information - all of these are compared with ILI rate (illness like Influenza) from	Through monitoring of 3 different types of data: 1) SAT report (<i>epidemiology report</i>) along with lab results, which are slow but trustworthy; 2) websites, social media and the news, which are fast but lack accuracy; and 3) Hotline 1422 when people call in to ask for information, which we will record in the report file and, once it becomes frequent, we will go to investigate.

				the SAT (<i>situational awareness team</i>) so that we can predict the pandemic. Finally for MERS-CoV, international data exchange about patients in the Middle East, along with data from the local hospitals to uncover "sneaky patients" with MERS who have been hospitalized there, plus data from ports of entry allow us to make a strategic plan to monitor the illness and train our DDC volunteers (hospital base, service base).	
	What was the source?	As above.	As above.	1) Matching of data from SAT and the ILL rate (illness like influenza) and patient histories and data from other departments and ministries; 2) hospital reports and local DDC reports.	SAT team and Internet, social media and Hotline 1422.
	When and through what channel did you receive information about this specific outbreak?	Team meetings and video conference with involved departments or ministries.	We received directives from DDC officials, plus a team meeting, plus communiques from the Department of Risk Communication.	As above.	As above.
	How much discretion do you have for	We pass our information to the provinces	My work unit responds to external	I have available a great deal of information to	Once we have collected all the data, these data

	decisions about where you get the information you need to do your work, and how much and when to pass on to others, and to whom?	under our responsibility, such as Surin, Buriram, Chaiyaphum and Korat, and to the local media in meetings as well.	stakeholders like citizens and the media, so we don't really report our findings to DDC headquarters. Plus we just communicate with external sources according to our orders, so there's nothing to do with decision making.	make decisions and issue orders to all of our teams and branches, and to disseminate to other departments involved in handling the responsibility.	will be transferred to the admins of the DDC, and then to the Ministry of Public Health through the SAT SME meeting (SAT team meeting with other departments in the DDC), facsimile loop, Chat in the BBM application or the Line app now.
	In a normal situation, who would expect you to pass on this information?	N/A (<i>P.12 is her boss.</i>)	As above.	The same as during a time of crisis: we communicate to local volunteers, district and provincial hospitals and DDC branches, and officials of responsible agencies.	As above for passing on information. The only things that makes a pandemic different from the normal situation are frequency and time. We make public announcements more frequently, sometimes every hour, twice a day. I had to come to work at 6 AM and stay until 10 PM every day during the H5N1 outbreak.
	Were the normal channels sufficient for dealing with outbreaks?	Yes.	Yes. We also have our media networking, social media and radio spots to broadcast pandemic news to the public.	Yes.	N/A
	How was the follow up and monitoring of	N/A (<i>P.12 is her boss.</i>)	We check the number of patients: if it	We use hospital-based combined with event-based	Meetings, and checking on the sources as above.

	the situation accomplished?		increases, it means that our messages aren't working.	forecasting, then we will send our volunteer public health staff to communicate with the public. We hired a soft-clipping company to monitor news for us. If there's no more news or no more 2nd generation patients, our work is effective.	
	Did you encounter any problems receiving information at that stage?	No.	I don't think so.	No, because if we control matters well, we divide the responsibility well, and the information will flow to Central automatically.	No, our team worked very hard in collaboration with the SAT team during the pandemic.
Part II					
Information and resources	What kind of information did you need to handle your job during the pandemic?	SRRT (SAT database), <i>(information from the)</i> DDC risk communication department.	National health policy, district information, and external news from the hospitals and news media.	We had to ascertain that it is a crisis, a pandemic, and urgent and unusual, then we have identify the factors of the disease under the circumstances according to person, place and time, and then we will use that information to plan our strategy along with production and expected results, e.g., when our local SAT (epidemiology team) is in the pandemic area to investigate, how much time they will	As above.

				need to close the case and to get information, we have to identify the scope of the area of work, etc.	
	What would be the usual resources?	All information from the DDC.	Information from the SAT and DDC officials.	Local hospitals, information from volunteer public health and SAT teams, exchange of pandemic news with the WHO.	As above.
	Were these resources reliable during the pandemic?	Yes.	Yes.	Exact, but still needed to be verified.	Those from the SAT team were, of course, because they have lab results, but again they're slow.
	Who would have been dependent on you as an information resource?	Media, provincial DDC branches.	Media networks, citizens and the local SAT (<i>situational awareness team</i>).	Everyone depends on my team's strategic plan, such as what we want the hospitals to do, how they have to report us about the situation. Then we will send our team to investigate and double check the hospitals' work, then the information will flow up to DDC headquarters automatically. Sometimes we have to visit them and observe to control the process, because whether we will be able to close the case or not depends on them.	All DDC branches and administrative officers, local hospital directors.
	Were there any problems in	N/A	N/A	As above.	Only the speed problem.

	providing accurate and timely information to these who depend on you?				
Part III					
Collaboration	Did you encounter any problems of communication specifically within your team during the outbreak?	Before we didn't have a plan, so our duties were not clear, but now we have the EOC. It has helped us to improve a lot.	It depends on personal relationships, but the most important thing is that key messages have to be transmitted.	At that point we forgot that times change, things change. Our communications were interfered with by atypical factors, which led to miscommunication. So the big question is how we communicate to the people under us. Long speeches, as in the past, are impossible because time constraints force us to hurry communication in all situations, not only during crises. So organizational responsibility and accuracy of information have become the most important aspects.	H5N1 had economic and social effects; communication was still closed and the administrators still hadn't seen the important of risk communication. We had to coordinate with many industries. Zika affected our tourist industry and society, thus our data was less closed from the public than MERS-CoV. Influenza, even though it was our problem, had too many actors, and when we tried to close off information, it caused confusion in our team, because, at that time, transmission of information spread from Internal Communications ("information center" aka Secretariat) through HQ to Risk Communication. Finally, during

					MERS, even though it was hard to collect data because of the language barrier. Because we had good networking, communication, both internal and external, was flowing well.
	Were you on the same team during the outbreaks?	Yes.	Yes.	Yes, It was right in my work term.	Not all - see above.
	What do you think your team handles well? A number of respondents took this as a question of whether their teams worked well. These responses are marked "(sic)".	N/A	N/A	I was very satisfied with my team of the time, because we used the system of hierarchy, which made things easier to organize and control.	Yes.
	Do you see anything that may cause teamwork problems during future outbreaks?	Confusion during an outbreak when we had to work together in a team, because we didn't divide our work clearly.	We don't really have problems with our teamwork. We normally get stuck in new diseases that we don't know anything about.	We need to balance data accuracy and organizational responsibility before anything.	I would say the weak point of my team is in individual capabilities, because I still cannot find people who are organized and can handle 5 tasks at a time, who can think systematically, can find information in the large picture, can analyze and synthesize. Intelligence alone is not enough: they need to be observant, think

					out of the box, always skeptical, and catch the unusual things that occur. <i>(She used a simile about catching something unusual, like a standing wave in water.)</i>
Leadership	Were the orders and information you received from your superior during these outbreak cogent and meaningful?	Yes.	So the orders and information will come to the head of my group after one of the admins in our branch has a meeting with DDC officials, then we will divide our work and make decisions together.	We needed to recheck if it was suspicious.	N/A
	How much leeway did your superiors allow you to make decisions regarding communication with your stakeholders?	It would be better if we made decisions for serious outbreaks as a team.	Never.	My administrative team and I view the situation, then we plan and make decisions on what to do.	Reporters always call me to ask for information. I will say only what my duty allows me to say.
	Did your superiors make a channel available for feedback?	Yes, we have worked together for a long time, so no problem there.	N/A	I am open to every opinion.	Yes. When some strategy doesn't make sense or doesn't fit with our work, as during the Zika outbreak, they open up a chance for us to talk and explain our reasoning.
	Was any use made of cross-disciplinary or	N/A	That tends to be more for the SAT	N/A	Yes.

	inter-bureau teams to formulate messages to be disseminated to DDC stakeholders?		(epidemiology team) than for us.		
	Were the information and messages you received from the top management consistent with what you were hearing at the bureau/team level?	Sometimes. It depends on when the data have been collected.	N/A	Never. Information has the dimension of time cause variation in its results. Also it depends on who you ask and on what their opinions and attitudes are. We all think differently as to how we make sense of things, such as the recent proposal made by the Ministry of Livestock regarding using color to divide the pandemic area into green, red and yellow zones. If you are an outsider, you will think that the red zone is the deadly zone, because they don't give a clear definition of colors. I would scope and define it clearly in order to get rid of misunderstanding and confusion, and contemplate how we could turn red to yellow, and yellow to green.	As above.
Sensemaking	Were there any points during the outbreaks at which you felt	No.	It (<i>the information</i>) was slow, but disease and	N/A	Only during MERS-CoV - it was hard to collect data

	the information you needed to do your job was incomplete or didn't make any sense?		situation evolved quickly.		because of the language barrier.
	Were there any lessons from the outbreaks you have encountered that you were able to use when trying ascertain the big picture during other outbreaks?	N/A	We need to speed up and share our info faster.	As above	The importance of risk communication and the organization of data. We need to be systematic and always save it to the system and to the hard drive.
	Do you see any potential problems that might make for difficulty in building a moment to moment understanding of developing epidemics in the future?	N/A	The speed of information sharing.	N/A	Possibly because we don't communicate/talk. It might come about because we don't have time and are busy with our duties. But this problem has resolved by the DDC crating a forum for us to talk and exchange our information in internal meetings, and sometimes through group chat, sometimes by going out to have lunch together.
	What would you recommend be done about them?	N/A	N/A	There are 3 main recommendations for my team: 1) Revise from time to time, because what we have known in the past might not be the same as now . Using GPS in	Now our team works smoothly and systematically. We have prepared our administration and spokespeople with clear, well prepared key messages. Many

				<p>demographics might not clear to anyone, so we have to clearly define what it means because it can cause the public to panic and government agencies could use this ambiguity to impose power on the public. For instance, if they say this is a red zone, the agency could prohibit movement within the zone, but in fact movement is ok, but requires care. 2) Double check after receiving information, and also check our communication that the recipient and sender both understand the same thing and present the same story, because if it causes problems and the public starts to blame us, there are 2 possibilities: 1) They misunderstand and act according to what they understand; and 2) they understand, but don't do what they need to do. 3) Adjust the style of communication to be short,</p>	<p>above us have trust in our data and let us continue to do our work. Hierarchy in teamwork is very important, because good management principles require 4 important factors: 1) command; 2) coordination; 3) control and 4) communication. A good leader who knows this and is aware of the surroundings and the situation will lead the team to work faster and systematically in style of patterns (<i>of action</i>). If we compare other organizations, like the Ministry of Livestock and the Ministry of Forestry, their communicators don't make short summaries or key messages or talking points for their leaders, so press releases ended up laying the blame on the faults of others during the H5N1 and recent rabies outbreaks. So, if the leader gets the right key information, they will lead in the</p>
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				comprehensive and understandable, i.e., easy for others to understand, especially the public.	right direction, communicate directly to the point with good control and directives that will ease the misunderstandings of key outside stakeholders as well.
	To what extent are you free to implement these changes on your own?	N/A	N/A		As above.
<i>Notes</i>		<i>Short Interview...</i>			