

USDA INSTRUCTIONAL RISK MESSAGES FOR
HIGH PATHOGEN AVIAN INFLUENZA

by

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ABSTRACT

High Pathogen Avian Influenza (HPAI) is a highly contagious disease threatening United States poultry farms. The aim of this study is to examine the extent to which current instructional risk communication by the United States Department of Agriculture (USDA) meets the expectations of existing literature, particularly the IDEA model. This study examined two documents produced by the USDA for the ongoing threat of HPAI, the *Red Book* and the Defend the Flock campaign. The aim of the documents is to provide U.S. poultry farmers and the public with knowledge and information about prevention and response to HPAI. The IDEA model was applied to serve as a framework to analyze how much of each component was present in the messaging. Specifically, the internalization, explanation, and action components were applied to the USDA documents.

The documents were coded by two researchers. The researchers, using a codebook, examined the documents and assessed each section (*Red Book*) or slogan (Defend the Flock) for the presence or absence of three components of the IDEA model: internalization, explanation, and action. When discrepancies arose between the coders, they were resolved through discussion. The results indicated the majority of the *Red Book* was dedicated to the explanation component of the IDEA model. Conversely, the majority of the Defend the Flock campaign was identified as either internalization or action.

The findings in this study can serve as lessons learned to help to improve the effectiveness of instructional risk messaging in similar crises. Specifically, this study recommends that messages be adapted to the intended audience to help them recognize their personal risks, that explanatory messages be intertwined with recommended actions, and that

organizations and agencies consider following the USDA's lead and provide complementary materials. For example, some materials may be highly detailed while an accompanying document could provide a simple, brief overview of the risk and recommended actions.

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CHAPTER ONE: INTRODUCTION

The realm of the unknown is not favorable to most, especially concerning food. Publics depend on Federal Agencies to regulate the food they consume every day. The United States Department of Agriculture Food and Nutrition (USDA) focuses on the American farming industry and food security, including, among many others, the poultry industry. Historically, many diseases have threatened the quality of American poultry and have been effectively controlled through the efforts of the USDA. However, a disease now threatens the farming industry with no cure in sight. High Pathogen Avian Influenza (HPAI), or “The Bird Flu” is an on-going crisis happening in the United States and other parts of the world.

The virus can infect a wide variety of birds, including turkeys, geese, and guinea fowl (USDA, n.d.). This particular virus has a surprise element attached; it is extremely contagious among poultry. HPAI can be transferred with ease from a bird in the wild to captive birds such as chickens, turkeys, and ducks (CDC, n.d.). This extreme degree of contagion makes the disease unpredictable and difficult to contain. The disease can spread through saliva, nasal secretion, and feces of an infected bird (USDA, n.d.). The potential for rapid spread through a flock is a problem for most poultry farms in the United States, due to the high concentration of poultry living together. If a flock has contracted this virus, it can quickly sicken and kill the infected birds due to HPAI’s high mortality rate (USDA, n.d.).

According to the USDA website, HPAI has been detected in 16 states. Migratory bird paths where HPAI has been detected include the Pacific, Central, and Mississippi flyways (USDA, n.d.). At this time, there are no human infections that have been detected in the United States, however, similar viruses have mutated to infect people in other cases. Human infection

normally only occurs when there is close and prolonged contact with infected birds, or contact with secretions of infected birds. The uncertainty and severity surrounding HPAI should not be taken lightly. This disease can have a profoundly negative impact on the poultry trade, which is an important part of the livestock industry in the United States (CDC, n.d.). Because there is no known cure for this virus, only precautions can be taken to help control the spread of the disease.

The prevention component of the USDA's attempts to control the spread of HPAI is difficult because of the disease's high contagion threat. The USDA has developed instructional materials to help poultry farmers across the U.S. increase self-efficacy against HPAI. The *Red Book* is a detailed document specifically explaining tactics for prevention and response to HPAI. The USDA has also created a campaign to enhance the knowledge and preparation of poultry farm owners entitled, *Defend the Flock*. The greatest strength a smallholder poultry farm owner could have against HPAI is knowledge, information and potential training to keep their farm safe (Sonaiya, 2007). The material produced by the USDA needs to focus on, not only giving information to the poultry farm owners, but also arming them with instructions for responding when threatened by HPAI.

The communication field provides ample research on risk messaging. A particular framework, based on this literature, that provides practical recommendations for managing the risk of diseases such as HPAI is the IDEA model. The IDEA model provides theoretical grounding for examining the instructional risk messaging put forth by the USDA. This model offers a general framework to create effective risk messaging during a variety of crises (Sellnow, Lane, Sellnow, Littlefield & 2017). Thus, the IDEA model can serve as a lens for evaluating the instructional capacity of the current risk messaging about HPAI by exposing potential gaps and offering recommendations.

Rationale and Research Question

HPAI is posing high risks to the poultry industry. Because the disease is highly contagious and spreads easily between wild and captive birds, controlling HPAI is nearly impossible. The disease quickly moves through the flock to sicken most, which results in high death rates. The interesting aspect of the HPAI is that some areas are still in the pre-crisis phase, while others have moved into the crisis stage. However, the threat of HPAI outbreaks creates a consistent need for effective instructional risk communication. Producers need to know how to prepare for and manage the disease if it strikes their farm. The USDA *Red Book* is designed to provide such instruction, along with the Defend the Flock campaign which features visually detailed instruction. The IDEA model provides a framework for analyzing the degree to which the USDA's existing instructional materials meet the criteria emphasized in the relevant instructional risk communication literature. This model, summarized in the next chapter, provides a guideline of the essential types of content needed for effective instructional risk communication. The following analysis seeks to determine the degree to which the content of the *Red Book* and the Defend the Flock campaign meet the expectations for effective communication that are established in the IDEA model. To do so, the study seeks to answer the following research question:

RQ: To what extent does current instructional risk communication by the USDA meet the expectations of the IDEA model?

The remainder of this thesis is divided into four chapters. Chapter two provides a summary of the relevant literature, including an overview of the IDEA model. Chapter three

explains the methods used in the study. Chapter four shares the results of the analysis. Finally, Chapter five provides conclusions and implications for the study.

CHAPTER TWO: LITERATURE REVIEW

The main element of a crisis is surprise; crises challenge normal conditions that existed prior to the crisis (Seeger & Sellnow, 2016). Crises can disrupt our sense of meaning and create a feeling of uncertainty. High Pathogen Avian Influenza (HPAI) embodies uncertainty because there is no known cure. The most recent outbreak happened March of 2017, affecting Tennessee, Alabama, Georgia, and Kentucky (Lee, Torchetti, Killian, Berhane, & Swayne, 2017). The devastating effects of HPAI can be understood from the perspective of how a crisis evolves. This chapter provides an introduction to characteristics of risk communication and crisis communication, managing uncertainty, and an in-depth explanation of the IDEA model for instructional risk communication.

Risk Communication

Before looking into the dynamics of a crisis, understanding the elements of risk is important. Risk communication is defined as “the intentional effort to inform the public about risks and persuade individuals to modify their behavior to reduce risk” (Seeger & Reynolds, 2007, p. 9). Reducing public uncertainty about emerging risks is crucial for providing an effective response, even though some information may still be unknown. When there is a lack of certainty, risk focuses on estimates, predictions and educated guesses (Sellnow & Sellnow, 2010). Such uncertainty is a central concept to risk communication. Despite this uncertainty, a vital component of risk communication is the ability to provide audiences with recommendations for protecting themselves, their loved ones, and their assets.

Development of effective risk messages can increase self-efficacy or perceived ability to take prescribed protective actions. Bandura (1977) explained self-efficacy as an individual's views or beliefs about their capabilities to perform a certain action. Public health focuses on risk and how agencies can inform publics and change certain behavior to improve health and safety (Reynolds & Seeger, 2005). If risks can be evaluated and controlled, the possibility of the risk manifesting into a crisis can be reduced. Thus, risk communication's purpose can be to uncover potential threats and discover steps that can be used to avoid crises (Sellnow & Sellnow, 2010). When agencies such as the USDA or CDC can identify risks and recommend steps to reduce the possibility of a crisis, communicating such crucial information is essential. An attribute of risk communication can also be that the public has a right to know about risks and have access to information which guides them to make informed choices (Reynolds & Seeger, 2005). From this perspective, risk can be described as a pre-stage of crisis; it is rare to discuss crisis communication without an acknowledgment of risk.

Crisis Communication

Crisis communication is centrally focused on image and reputation restoration, while risk communication is focused on how the information is presented, and used to persuade (Sheppard, Janoske, & Liu, 2012). Risk communication and crisis communication are separate fields, however, in health-related crises such as HPAI, they can rarely function independently of one another (See Table 1). The turning point from risk to crisis is when the potential risks have escalated and require immediate attention. Crises can occur in a "social, economic, or political setting and have the potential to create more change than any other single phenomenon" (Sellnow & Seeger, 2013, p. 1). This statement shows the importance of understanding and

recognizing the risks and potential crisis that can occur. The need and ability to change in social, economic, environmental, and political aspects because of crises can help reshape institutions already in place. Crises are inevitable regardless of whether they are of small or large magnitude, human made or natural (Seeger, Sellnow, & Ulmer, 2003). Regardless of their origin, it is possible to reduce the severity of damage caused by crises through proper planning and managing of risks.

The increasing frequency and magnitude of crises calls for research focusing on the similarities and relationships across many crisis types (Sellnow & Seeger, 2013). Theorizing various crisis types may not prevent the anomaly, but research can help to reduce the uncertainty and damage done when similar crises arise through the development of consistent responses strategies. Health related crises are one such genre of crisis types. HPAI is a health-related crisis that can be seen as an ongoing threat that is continuously lurking in the pre-crisis stage. Effectively managing such crises relies on the ability to create a successful instructional plan (Sellnow, Limperos et. al, 2015). Crises can be unpredictable and devastating, whether they are human made or natural. When emerging risks are recognized, strategic instructional messaging can be formed for a preemptive attempt to inform publics before, during, and after crisis events.

Table 1 Differences Between Risk and Crisis

<p>Risk Communication Prepare for the possibility of a crisis.</p> <ul style="list-style-type: none">• Overwhelmingly persuasive<ul style="list-style-type: none">○ Mediated through advertising and campaigns• Planned and coordinated• Based on one-way communication• Messages focus on preparation <p>Crisis Communication Occurs unexpectedly and requires immediate response.</p> <ul style="list-style-type: none">• Overwhelmingly informative<ul style="list-style-type: none">○ Mediated through media and warning systems• Unplanned and adaptive• Based on two-way communication• Messages focus on responsiveness
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Crisis and Emergency Risk Communication Model

Because of its focus on both risk and crisis communication, the CERC model is particularly fitting for understanding HPAI as a pre-crisis threat. Crisis and emergency risk communication is a term created by the Centers for Disease Control and Prevention (CDC) in response to health-related crises (Reynolds & Seeger, 2005). The importance of combining risk communication and crisis communication is essential when there is high uncertainty and imminent danger. CERC has since been developed into a model that features a sequence of activities for managing risks that manifest into crises (See Table 2). The mission of the CERC model is to increase the ability of individuals and communities to help themselves by acknowledging the participatory nature of crisis management (Veil, Reynolds, Sellnow, & Seeger, 2008). The CERC model emphasizes uncovering the important features and needs at the varying stages of an ongoing event (Reynolds & Seeger, 2005). This way of thinking is broader and can encompass more possibilities than an individual focus on either risk or crisis. CERC

emphasizes the importance of communication in public health emergency situations, for managing both risks and crises. Reynolds & Seeger (2005) created a five-stage theory, the crisis and emergency risk model that can help to understand how crises develop in a largely predictable and systematic. In the following paragraphs, I offer a general summary of the five stages of the CERC model. This summary establishes an informative context for comprehending the role of instructional communication for threats such as HPAI that involve both risk and crisis elements.

Stage I: Pre-Crisis. This section of the CERC model includes risk messages, warnings and possible preparations. Organizations can produce campaigns focusing on publics and the response community to help educate them before a crisis occurs. This communication can help monitor potential risks, and help those directly involved gain a general understanding of their potential emerging risks. The education campaign can help make changes in one's behavior and improve self-efficacy. Once there is an understanding, there can be warning messages that are specific to a threat. Next, in the pre-crisis stage, alliances can form between different organizations and recommendations can be provided by experts. This stage sets up the potential messages that can be shared during initial events.

Stage II: Initial Event. The next section of the CERC model focuses on self-efficacy, uncertainty reduction, and reassurance. This stage emphasizes getting immediate communication out to affected groups or organizations and at-risk publics. The communication is centered on empathy and reassurance in a time where emotions are intense. During this stage, there is a general understanding of the crisis situation and possible outcomes that are formed from the information available. This information should be relayed to affected publics through designated agency spokespersons using formal channels/methods of communication. The main point of this

stage is to reduce the uncertainty surrounding the crisis, relay specific knowledge of emergency responses, and understand where/how to get more information to increase self-efficacy.

Stage III: Maintenance. This stage of the CERC model resembles stage two, however, the maintenance stage focuses primarily on the ongoing need for communication. In this stage, communication to the public and affected groups revolves around a more accurate understanding of the ongoing risks and the background factors which played into the crisis. The maintenance stage is where rumors and misunderstandings are corrected by communicating with and acquiring feedback from the affected publics. This stage should enable publics to make informed decisions based on the knowledge gathered. Overall, this information helps provide an ongoing explanation of where and how publics can gain information.

Stage IV: Resolution. The fourth stage of the CERC model, resolution, opens the discussion about cause and the new understanding of risk. The resolution stage focuses on informing publics about recovery, rebuilding efforts, and remediation. Persuasion can also be an aspect of stage four. This stage continues an open and honest discussion about the resolution of issues. These issues can deal with blame, responsibility, and how to respond in the future. Resolution helps publics gain an understanding of potential new risks, risk avoidance behaviors, and how to respond in a threat situation. This stage of communication also helps to reinforce a positive image by promoting recovery activities and the capabilities of the agency to assist those in need.

Stage V: Evaluation. The last stage of the CERC model deals with the understanding of new risks, a discussion about the response, and a consensus about lessons learned. The communication in the evaluation stage is directed toward the response community and agencies involved. This community evaluates responses and ascertains how effective the communication

was during the crisis. There is a formal documentation in this stage about the lessons learned. This review process can help develop better actions for improving crisis communication and crisis responses in the future. Lastly, the evaluation stage circles into stage one by proposing pre-crisis activities focused on the risks that preceded the crisis.

The CERC model helps to combine existing practices into a comprehensive system (Reynolds & Seeger, 2005). CERC provides a merging of two separate communication domains, risk and crisis, into a unified response effort. The CERC model further provides a fundamental groundwork for the changing and unique aspects of crises. CERC acknowledges that emergencies and crises that threaten public health will unfortunately become increasingly common (Reynolds & Seeger, 2005). The needs during a crisis evolve, which cause the communication demands to change in dynamic ways (Sellnow & Seeger, 2013). There may not be a chance to prevent a crisis, but there are typically ways to minimize the risks and help reduce uncertainty. Because of the nature and current status of the HPAI risk, the first stage of the CERC model provides the most useful context for the IDEA model's emphasis on instructional risk communication.

In-Depth Look at CERC Stage I: Pre-Crisis

As stated above, stage one of the CERC model focuses on the risks before a full-blown, widespread crisis occurs. Several outbreaks of HPAI have occurred in the United States. These outbreaks, however, have been limited in their spread to other communities. Thus, the HPAI risk has not yet manifested in an industry-wide or public health crisis. The risk messaging in stage one of CERC deals with the probabilities of harm, and suggests methods to reduce the chance of the risks (Reynolds & Seeger, 2005). In cases such as HPAI where a major risk has not yet

become a full-blown crisis, understanding the potential risks and how to communicate these risks to publics is essential. Stage one encompasses communicating and educating those at greatest risk. In the case of HPAI, those at risk are primarily poultry producers and their industry stakeholders. The risk messaging is normally communicated in a persuasive manner in order to help change the target audiences' behavior (Reynolds & Seeger, 2005). When discussing the threat of a health crisis, this message content differs from that of a natural disaster. There are already pre-set warnings and preparations the publics expect to hear when natural disaster crises strike. However, when a health crisis occurs, there is greater uncertainty. When examining a crisis through a public health frame, Hawkins and Linvill (2010) state message content should, “(a) include information connecting the health issue to the larger social and environmental context, (b) expose risk factors related to the health issue, and (c) includes prevention information” (p. 711). The risk messaging needs to be both informative and persuasive, along with discussing the severity of the risk being relayed to the relevant publics.

Instructional Risk Communication

When encouraging publics to take steps to protect themselves, their loved ones, and their resources during emerging risks or a potential crisis, the messages typically take the form of instructional communication. Instructional communication consists of all the messages sent and received in the process of teaching and learning (Sellnow & Sellnow, 2010). Instructional communication can be looked at in a larger context than just the classroom. Rather, instructional communication encompasses all messages intended to share information, change a behavior, generate interest, and help provide understanding (Sellnow & Sellnow, 2010). When gauging the effectiveness of instructional communication, the following three domains should be considered:

affective, cognitive, and behavioral (Sellnow, Lane et. al., 2015). The first domain, affective, deals with one's feelings or emotions about something. The cognitive domain focuses on the knowledge an individual has about something. The third domain, behavioral, is the way we act or behave towards something. If an instructional risk message can encompass all three characteristics, it is more likely to influence a listener's response to the risk at hand.

When encouraging publics to engage in self-efficacious behavior during a pre-crisis or crisis event, understanding how the audience members will interpret and respond to the instructional message is important (Sellnow, Lane et. al, 2015). If the instructional messaging is generated as described above, the message content can help change behavior during a crisis. When looking at the importance of instructional communication and risk/crisis communication, the link between learning and the practice of instruction is paramount (Sellnow & Sellnow, 2010). When a crisis happens, effective instructional communication can reduce uncertainty and promote self-protective actions. To do so, however, the message must provide audiences with comprehension, retention, and opportunities for application (Sellnow & Sellnow, 2010). Not only is it important to have instructional communication when responding to a crisis, it is also crucial for publics to have solid instruction when learning about crisis. If publics are able to comprehend and act on knowledge, they will be able to have an accurate application of material. From the perspective of the CERC model, the integration of instructional communication in all phases of risk and crisis events is crucial.

IDEA Model

During a crisis, access to information is imperative. Even more important is the ability to develop self-protective messages on which people can act. The IDEA model (see Figure 1) is a

framework that can be used to create messages for publics on how to protect themselves in a crisis event (Sellnow, Lane, Sellnow, & Littlefield, 2017). The model seeks to motivate and empower people to act wisely during an emergency. To achieve this objective, the IDEA model includes four components to effectively designing instructional risk messages: internalization, distribution, explanation, and action (Sellnow, et al., 2017). This model provides an effective structure for designing risk and crisis messaging. The IDEA model provides a strategic approach for affective and cognitive learning, which can lead to changed behavior (Sellnow, et al., 2017).

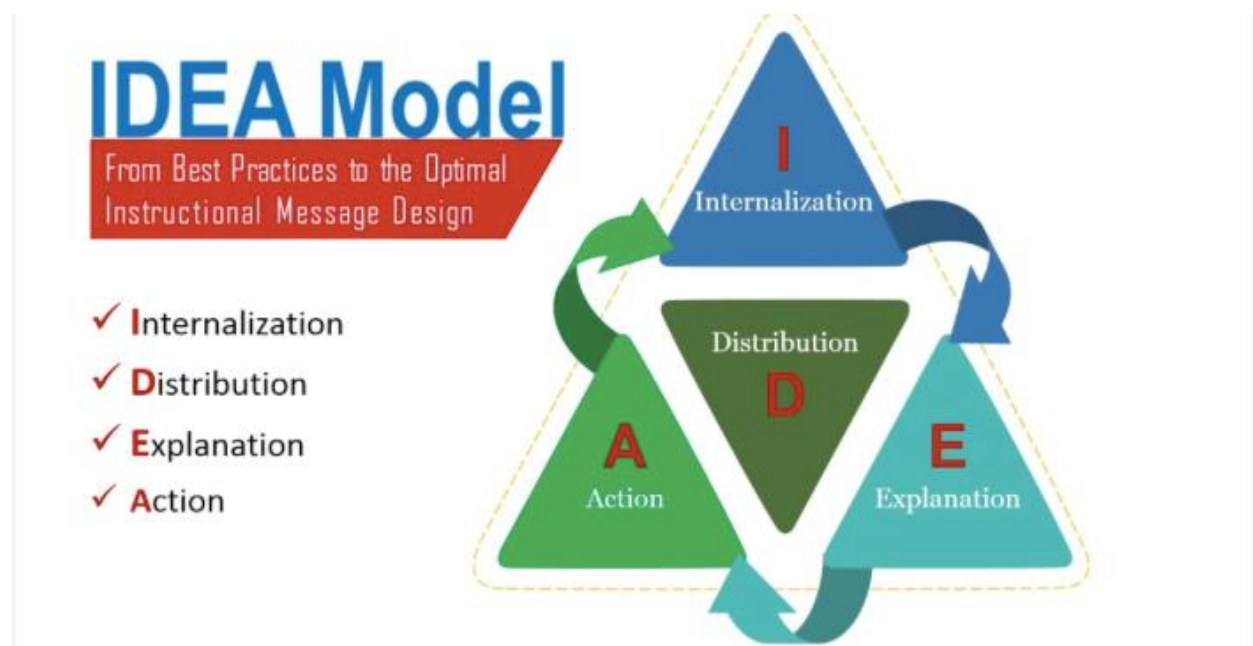


Figure 1 IDEA MODEL

Created by Sellnow & Sellnow (2013)

In a crisis, getting people to take risk messaging seriously can be difficult. The first component of the IDEA, internalization, suggests offering message types that encourage the receiver to internalize the message (Sellnow & Sellnow, in press). The process of getting an individual to internalize a message is a daunting task in the pre-crisis stage. Sellnow & Sellnow (in press) offer five ways to improve risk messaging in the internalization stage: express care and

compassion, focus on the personal importance, proximity, timeliness of the crisis, and use exemplars. The individual needs to internalize the messaging and ask, to what extent themselves and those they care about could be affected (Sellnow, et al., 2017).

The channels and coordination an organization selects to disseminate risk messaging is crucial to effectiveness. The distribution component of the IDEA model is facing on-going change. The new distribution channels of social media, text messaging, and phone apps can bring opportunities and challenges (Sellnow & Sellnow, in press). During a time of crisis, most individuals seek out information on their own. The new abundance of technology offers multiple channels for individuals to use and the ability for organizations to tailor messages to specific audiences. The focus on strictly new media, however, can negatively affect the distribution of the message. Many people in a crisis do not have access or are not normal users of new media to gather information. In this case traditional channels still need to be an option (Sellnow & Sellnow, in press). Another challenge for organizations this maintaining a unified message. Distribution should have the same general message despite the channel. This message convergence is vital because audiences will likely gather information from multiple places before taking action. If there is conflicting information gathered by individuals, there is less likelihood they will be to engage in self-protecting behavior (Sellnow & Sellnow, in press).

When an individual has internalized the risk messaging, many questions are likely to emerge. For the IDEA model, the third component, explanation, seeks to provide answers to these questions. Providing such answers can be challenging when there is high uncertainty surrounding the crisis. It is crucial for explanatory messages to come from credible sources and to provide accurate content shared in a common language that diverse audiences can understand (Sellnow, et al., 2017). The need for an organization to engage in continuous communication

throughout the crisis leaves little space for misinformation and confusion. The explanation of a crisis is on-going and organizations need to be prepared to disseminate information to a variety of audiences. The time before, during, and after a crisis can be highly uncertain for publics. Accurate explanatory messages from spokespersons who are seen as credible can reduce this uncertainty and prepare audiences for taking appropriate actions to protect themselves, their loved ones, and their property (Sellnow & Sellnow, in press).

The final component of the IDEA model, action, helps to answer the questions about how to protect yourself during a crisis. Sellnow & Sellnow (in press) explain that providing specific actionable instructions in what individuals should or should not do, before, throughout, and after the crisis, is imperative. These actions should be provided in the form of unambiguous instructions. The time before a crisis should be used for education campaigns that can help individuals learn how to take action quickly when a crisis occurs (Sellnow & Sellnow, in press). Providing simple and basic instructions through such pre-crisis campaigns is very important because, in a time of crisis, individuals are stressed and potentially confused. Knowing some basic steps in advance can diminish this confusion and uncertainty. For purposes of simplicity and responsiveness, visual support can be offered in educational campaigns as a cognitive shortcut (Sellnow & Sellnow, in press). These visuals help individuals remember terse, actionable instructions. The messages should not necessarily be limited to those directly affected by the risk or crisis. Individuals could have loved ones in affected areas and want to know how to help them. Thus, offering action steps for those individuals indirectly impacted by the crisis is also important to consider (Sellnow & Sellnow, in press). In the time of a crisis, individuals want the ability to protect themselves and their loved ones. Organizations can help reduce uncertainty by providing specific actionable instructions.

The IDEA model provides a guiding framework when developing effective risk messages to encourage and empower people to protect themselves. The ability for this model to remain fluid and adaptive to a wide range of crises is unique. However, all three content components of internalization, explanation, and action need to be presented in a cohesive manner. If one component is privileged over another, it can decrease the effectiveness. The explanation component is often favored by organizations when developing risk messaging. Below are two studies that further explore the risk messaging put forth by various organizations in health related crises.

Frisby, Veil, & Sellnow (2014) conducted a study focusing on the instructional messages disseminated by government agencies and organizations during the 2010 *Salmonella* outbreak in shell eggs. The researchers found the messages provided for publics simply included information about the outbreak. If one was to categorize this content using the IDEA model, it would fall under the explanation category. The messages were strictly informing the public, about the current food threat. Little information about specifically who was threatened and how to determine if individuals had the contaminated product in their homes was provided. Similarly, very few recommendations for protective action were present in messages from government agencies. Instead, viewers and readers were asked to go to various websites to get the information they needed to avoid contracting *Salmonella*.

Sellnow-Richmond, Sellnow, & George (2018) applied the IDEA model to the recent Ebola outbreak. The researchers found the messaging shared by the media and several health agencies prioritized the explanation component over both the internalization component and action component. Thus, publics were made aware of the threat without clear messaging about who was and was not at risk as well as what to do to avoid contracting the disease. Sellnow-

Richmond, et al. (2018) explain that this imbalanced message failed to reduce anxiety. They argued that incorporating internalization, explanation, and action cohesively can increase the level of impact of the messages. As shown in the results of their study, providing this level of balance is a challenge for those responding to health-related crises. The IDEA model is proposed as a means for enhancing the awareness of practitioners to provide a balanced message as they prepare to communicate with publics during similar crisis and high-risk events.

Summary

HPAI is an on-going crisis affecting poultry farms across the United States. Risk and crisis communication directed to poultry farmers about HPAI is crucial for preventing and responding to this disease. Responding to health-related crises such as HPAI requires instructional messages that combine both risk and crisis communication. The IDEA model is an existing framework for creating and analyzing these instructional risk communication. The IDEA model framework offers researchers the ability to examine to what degree the instructional risk messages are well-balanced and complete. As seen in the current literature, organizations tend to privilege the explanation component of the IDEA model over internalization and action. This imbalance can decrease the effectiveness of the instructional risk messaging. The ability to integrate all three components in risk messaging can be a challenge. Applying this framework to current risk messages can provide the opportunity to expose the gaps and provide recommendations that could potentially increase the overall message effectiveness. The IDEA model is used to evaluate the current instructional risk messaging developed by the USDA for poultry farm owners across the United States.

CHAPTER THREE: METHODOLOGY

The USDA's *Red Book* and Defend the Flock campaign provide a current account of HPAI for poultry producers. Accounts often take the form of such official documents and reports to establish a narrative through which "persons, organizations, or agencies are held accountable" (Seeger & Sellnow, 2016, p. 49). The *Red Book* and Defend the Flock campaign establish a narrative for explaining previous outbreaks of HPAI, the risk of future outbreaks, and the responsibilities of poultry producers in preparing for and preventing future outbreaks. Accounts can be analyzed using "guidelines members are expected to follow" (Seeger & Sellnow, 2016, p. 50). As established in the previous review of literature, the IDEA model provides fitting guidelines for instructing publics, in this case the poultry industry, about how to comprehend and respond to risks and crises. For this analysis, then, the IDEA model provides a conceptual framework for assessing the degree to which the instructional communication produced by the USDA in its *Red Book* and Defend the Flock campaign meet the expectations of the IDEA model when informing poultry farmers about HPAI.

Conceptual frameworks are used in qualitative research to establish "a system of concepts, assumptions, expectations, beliefs, and theories that supports and informs your research" (Maxwell, 2013, p. 39). The IDEA model establishes a framework for achieving this objective for analyzing the USDA's HPAI documents. Because this study seeks to assess the USDA's HPAI materials using an established model as a conceptual framework, the method is based on an etic approach. Lindlof & Taylor (2017) explained when applying an etic approach a researcher "evaluates through the categories provided by our disciplinary knowledge and theory" (p. 123).

In this study the IDEA model was used as a conceptual framework for conducting a qualitative content analysis of the *Red Book* and Defend the Flock campaign. Krippendorff (2004) explains that scholars engage in qualitative content analysis by “using known literature to contextualize their readings of given texts, rearticulating the meanings of those texts in view of the assumed contexts” (p. 87). Thus, conceptual frameworks guide the analysis of the selected content by providing a context for interpretation. Details of how the IDEA model is used as a qualitative content analysis framework are provided in the procedures section below.

Data Set

The USDA produces risk messaging to inform poultry farmers in the United States about HPAI. This study analyzes two related documents produced by the USDA. The first document is the *Red Book* for the High Pathogen Avian Influenza Response Plan. The *Red Book* is guided by policies to prevent and respond to a potential HPAI outbreak. The *Red Book* incorporates previous outbreaks as lessons and adapts them into a framework for current plans. This document is for public knowledge and can be easily accessed and downloaded on the USDA’s website. The detailed document was last updated in May, 2017. This document was selected for examination due to it being the main HPAI defense provided by the USDA. It is intended as a guidebook for the prevention of and response to HPAI. This detailed document provides a current examination of the USDA’s instructional risk messaging.

The second document examined is the Defend the Flock campaign. This campaign features social graphics which provide direct and simple instruction about how to prevent HPAI. These social graphics are designed for poultry farms across the United States to raise awareness

about steps to avert a HPAI outbreak. The Defend the Flock campaign is important to examine in this study as well, due to the unique way information is displayed. This campaign focuses on taking the information present in the *Red Book* and disseminating the information in a much more concise and highly visual manner. All seven-social graphics created by the USDA will be part of the analysis. The Defend the Flock campaign is featured on the USDA website and can be easily accessed and downloaded.

Procedure

This study investigates whether or not the two documents described above featured three components of the IDEA model: internalization, explanation, and action. The distribution component was not coded because the distribution strategy of the USDA is already known. The documents are available for free download on the agency's website. The data sets needed to be examined in an objective manner, which resulted in using an etic approach to design a codebook (Lindlof & Taylor, 2011).

A study done by Sellnow-Richmond, et al., (2018) used a codebook specific to the IDEA model. The researchers designed this codebook to explicitly analyze the four elements of the IDEA model and was applied to the recent outbreak of Ebola. Because this study is also guided by the IDEA model as a coding framework, the Sellnow-Richmond codebook was adapted for analyzing the USDA's HPAI materials. The adapted version is provided in Appendix A.

To ensure reliability, there were two independent coders. The coders were familiar with the IDEA model and were trained specifically on the codebook by the author. Each coder received an individual hardcopy of the *Red Book* and the social graphics from the Defend the Flock campaign. The coders also received different colored pens to differentiate between each

element of the IDEA model. Each section of the *Red Book* was examined to determine under which component of the IDEA model it fell. The seven-social graphics were coded individually to understand what components of the IDEA model were present. Again, the coders only focused on three components of the IDEA model: internalization, explanation, and action. When discrepancies arose, they were resolved through discussion supervised by the author (see the following section on inter-coder reliability).

The volume of material coded under each category of the IDEA model in the *Red Book* was measured in terms of column inches. Specifically, number of inches of the book devoted to each IDEA category was determined. These totals allowed for a comparison of the amount of space devoted to each category. This method was used for purposes of practicality and efficiency. Previous research has demonstrated this method of measuring column inches in various research disciplines. For example, a study by Pedersen (2002) examined the difference in written coverage between two variables, female athletes and male athletes. Measurement of column inches provides a visual representation of the space devoted to each component of the IDEA model. The Defend the Flock campaign is composed of seven graphics that each contain slogans. Each slogan was coded individually. No single slogan was included in more than one IDEA category. Comparison among the categories in the Defend the Flock campaign are based on the number of slogans attributed to each category.

Inter-coder Reliability

As discussed above, the study included two coders. Each coder was provided a printed version of the data sets. After completing a training session on the codebook, the two coders used colored pens to identify the sections of the documents they believed were internalization,

explanation, action, or other. Other included any content that could not be considered as an IDEA model category. When coding the *Red Book*, there was strong consensus. When a discrepancy arose, discussion lead by the author produced resolution. Disagreements focused primarily on questions of whether or not a section could be coded as action. For example, on page 5-18 a table summarizes the premises designations in an HPAI outbreak. One of the coders initially placed this section in the action component, while the other coder placed this section in the explanation component. Upon further discussion, a consensus was reached to code this section as explanation due to the lack of specific actions steps. When the coders were examining the social graphics, consensus was reached throughout the entire process.

Summary

The objective of this study is to analyze whether or not the documents produced by the USDA include components of the IDEA model. This analysis will help determine the degree to which the USDA's efforts to prepare and respond for HPAI conform to the expectations established through instructional risk communication research. Further, comparing the results to existing literature may introduce opportunities for extending theory and recommendations for future research.

CHAPTER FOUR: FINDINGS

This chapter presents the results based on the following research question: To what extent does current instructional risk communication by the USDA meet the expectations of the IDEA model? It analyzes the USDA *Red Book* and Defend the Flock campaign according to three of the components of the IDEA model: internalization, explanation, and action. Each data set was thematically coded to gauge how much internalization, explanation, and action were present.

The IDEA model is a framework that can be used to create messages for publics on who is at risk, why they are at risk, and how they can protect themselves in a crisis event (Sellnow, Lane, Sellnow, & Littlefield, 2017). The first component of the IDEA model, internalization, focuses on inspiring individuals to internalize the risk message. The explanation aspect of the model focuses on making the scientific information understandable to all affected audiences. The last component, action, provides specific and unambiguous instructions.

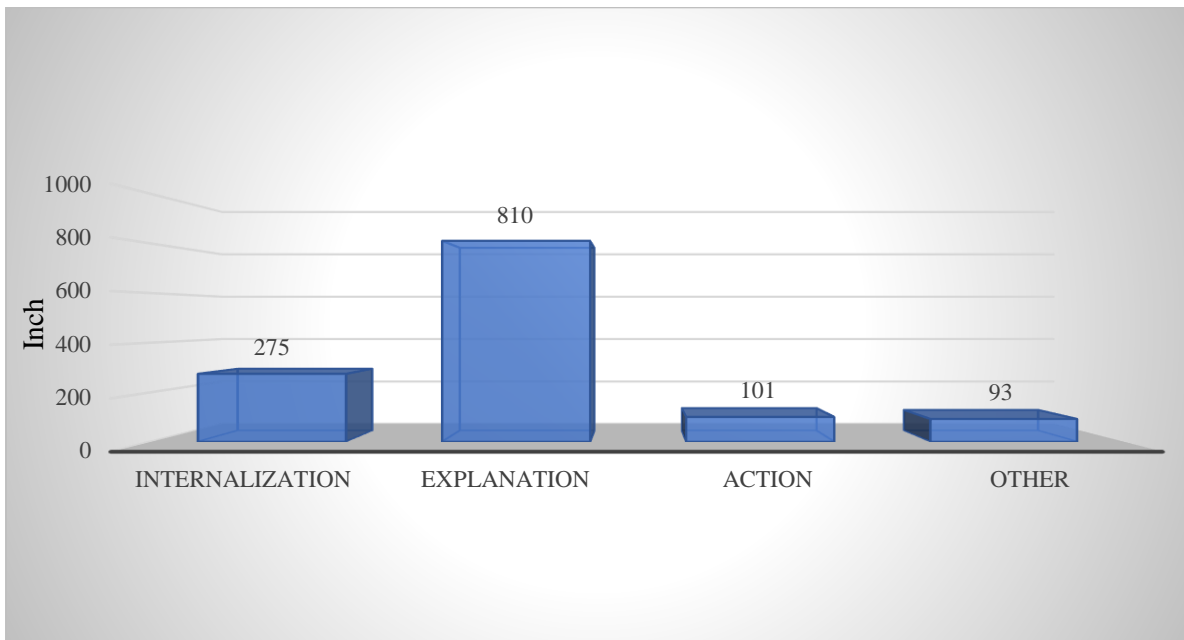
The coding done by three researchers with a detailed codebook (see Appendix A) was used for both documents. Once the coding was complete, the number of inches in each category was measured for the *Red Book*. The total number of column inches focusing on each IDEA model component was calculated by measuring with a ruler the amount of space on each page dedicated to each component. The chapter begins with the results found for internalization, explanation, and action in the *Red Book*. The second section shows the results found for internalization, explanation, and action in the Defend the Flock Campaign. For the Defend the

Flock campaign, the total number of slogans focusing on each component of the IDEA model was determined. Material for each of the documents that did not fit with the IDEA model components was coded as “other.” This chapter focuses solely on presenting the results of the study.

Results: Red Book

The Red Book was examined to explore how much of each section was a component of the IDEA Model. The coders found 275 inches for the internalization component. The majority of the Red Book was considered explanation (810 inches). Action was found to have the fewest references with a total of 101 inches. An “other” category was included to represent sections with information that was not considered internalization, explanation, or action. For example, material in the introduction sections providing an overview of the upcoming chapters, the glossary appendix, the abbreviation glossary, and the references were all coded as other. In the upcoming sections, each IDEA component is presented in further detail.

Table 2 Red Book Results



Internalization

The first component of the IDEA model is internalization. This component focuses on motivating individuals to recognize the risks they face. Internalization in the codebook functioned to get attention and to aid retention for those who could be impacted by HPAI. The question being asked from an individual viewpoint was, “How am I and those I care about affected or potentially affected and to what degree?” The following components were identified as internalization in the USDA *Red Book*.

Personal Impact/Relevance. For the personal impact/relevance sub-component of the codebook, the coders searched for information about how likely the individual or those they care about might be affected by HPAI, information identifying the possible consequences from an outbreak, and the potential severity of these consequences. The longest example of personal impact/relevance the coders found was a questionnaire provided by the USDA. This questionnaire is designed to help the poultry farm owners understand how relevant and at risk

their farm could be to HPAI. This questionnaire was categorized as internationalization because it personalizes the disease and shows how likely the poultry farmers could be affected. Below, in figure 4, the introduction page of the questionnaire is provided as an example:

HPAI Investigation - Questionnaire

INSTRUCTIONS

The purposes of these investigations are to assess potential pathways of initial introduction of HPAI viruses onto commercial poultry operations and potential lateral transmission routes of HPAI viruses from infected premises to noninfected premises.

Following confirmation of an HPAI virus introduction into a commercial flock, an investigation should be initiated as soon as possible, no later than 1 week following detection. The investigator(s) assigned should be integrated into other response activities but their primary focus is on completion of the introduction investigation.

The investigation form provided is a guide for conducting a systematic and standardized assessment of potential pathways of initial virus movement onto the farm and potential movement of the virus off the farm. All sections of the form should be completed through direct conversation with the individual(s) most familiar with the farm's management and operations and questions are to be answered for the period 2 weeks prior to the detection of HPAI. Where applicable, direct observation of the biosecurity or management practice asked about should be conducted. This is not a box-checking exercise but an in-depth review of the current biosecurity and management practices and exposure risks on an affected farm. For example, direct observation of the farm employee donning and doffing procedures and compliance with company biosecurity practices is more important than checking the box on the form that indicates workers wear coveralls into the poultry houses. Investigators are encouraged to take notes and include them with the investigation form when completed.

An investigation form should be completed for the infected house or farm and **at least one** noninfected house or farm within the same complex as near as possible to the index infected flock.

Figure 2 HPAI Investigation – Questionnaire

Created by the USDA

Proximity/Zones. The second sub-component of internalization identified by the coders was proximity/zones. This section of the codebook looked at where the event is occurring and how close it is to the individual. The aspect of proximity/zones also focused on whether or not the location is specified and in what detail. The coders in this study did find examples of proximity/zones. In figure 2, the coders found examples of a zone when infected premises would be depopulated. The area marked with an X and the surrounding area is the infected premise. This is where depopulation of poultry would occur. The infected zone surrounding the X could potentially face depopulation if the disease is not contained. This graphic shows the multiple zones where a farm could be located when an outbreak occurs. Another zone example the coders

found was in figure 3. This figure takes figure 2 one step further to explain what would be considered an infected zone, a buffer zone, a vaccination zone, or a surveillance zone. The coders deemed these examples as proximity due to the internalization an individual would feel when looking at the large area of a possible outbreak. These figures offer poultry farmers the ability to see when and how their farms are affected.

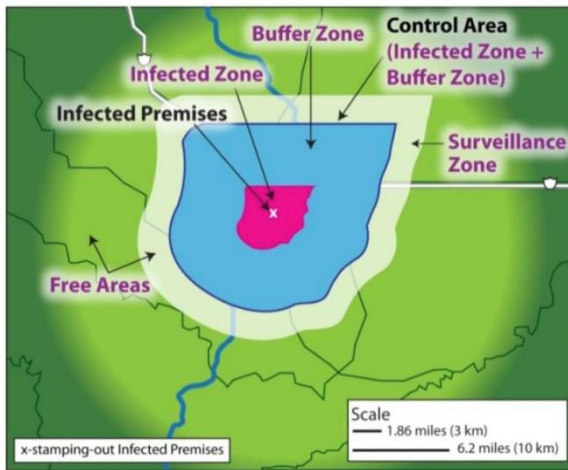


Figure 3 Example of Zones and Areas in Relation to Stamping-Out

Created by the USDA

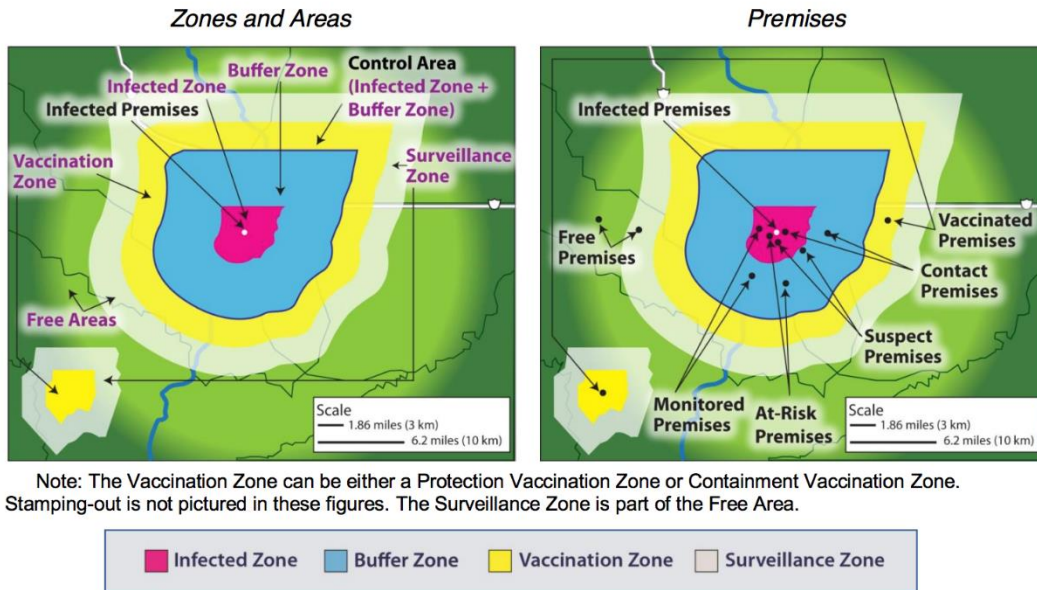


Figure 4 Vaccination Zones

Created by the USDA

Exemplification. The last sub-component of internalization looks at examples of similar events occurring in the past. These examples could have been positive or negative with the main focus on getting attention and making past events memorable. On page 1-7 (the *Red Book* uses a system where the first number is the chapter and the number following the dash is the page number of that chapter), the USDA *Red Book* showed the history of HPAI in the United States. An overview of the history was given, specifically stating “LPAI viruses are present in wild birds and are periodically detected in domestic poultry flocks in the United States.” The Red Book then gives two specific examples of the different breakouts that have occurred. The first of this section, (1-7) states, “The 2014-2015 HPAI outbreak is the largest ever in the United States, and resulted in the loss of 50.5 million commercial birds (depopulated or succumbed to the virus) mostly infected with H5N2.” The next example, on pages 1-8, discusses the 2016 Indiana

HPAI/LPAI Outbreak. In this outbreak, “just over 400,000 commercial birds were affected; no backyard flocks were affected by this incident.” On page 1-10, the book uses a past outbreak as an example of what happened to the economy due to HPAI. The *Red book* explains, “A widespread HPAI outbreak can have substantial economic impact, as clearly demonstrated in the 2014-2015 outbreak in the United States.” These examples provided by the USDA are exceptionally negative, however, they help gain the poultry farmer’s attention by stating the realistic possibility of this deadly disease.

Another major section of the *Red Book* that the coders found as exemplification was Appendix G (G-1). This appendix provides both Federal and State examples. It features examples of the outbreaks in Kansas (2015), North Dakota (2015), West Virginia (2015), and a Federal example from 2003.

Explanation

The second component of the IDEA model, discussed here, seeks to provide answers to questions about HPAI that could arise. Providing such explanation can be challenging when there is high uncertainty, however, sharing accurate information in a common language for those who are at risk is crucial. The main goal for the coders was to identify when information was being provided about what is happening and what is being done about the event. Based on the codebook the coders looked for elements such as source credibility, accurate science and information, intelligible translation for audiences, and examples that made complex information

easier to understand. The following are the six chapters and appendixes in the Red Book identified by the coders as explanation.

HPAI information. The first chapter of the USDA *Red Book* focuses on information about High Pathogen Avian Influenza. In the first chapter, on page 1-3, the current situation of HPAI in the United States is discussed. The following sections of the chapter are then divided into specific HPAI information. On page 1-4, the etiology of the disease is discussed. Next, the ecology of the disease is explained on page 1-11. This progression leads to the explanation of diagnosis in avian species (p. 1-13), the difference between active immunity vs. passive immunity (p. 1-15), and ends by explaining the vaccination used to fight HPAI (p. 1-16).

Framework for HPAI preparedness/response. The coders found the entire second chapter is used to explain the national response framework, national incident management system (NIMS), and the preparedness and response plan. On page 2-2, the foreign animal disease preparedness and response plan is explained in detail. It continues on pages 2-4 to explain the USDA's roles and responsibilities in a HPAI outbreak.

USDA HPAI preparedness/response. In chapter three of the Red Book, the concentration is on steps the USDA takes to control HPAI. This chapter explains the preparedness exercises and training (p. 3-1), domestic activities (p. 3-2), and international activities (3-4). This chapter then adds more specifics to the USDA organizational strategy mentioned in the previous chapter. The incident management structure for an HPAI outbreak is outlined on page 3-6. This structure

explains the multiagency coordination (3-8), the diagnostic resources, and laboratory support (p. 3-10) that function during HPAI outbreaks.

HPAI outbreak response goals/strategy. Chapter four covers a wide range of information about how multiple agencies respond to an HPAI outbreak in poultry within the United States. First, the principles, critical activities, and tools needed for an HPAI response are explained in great detail starting on page 4-2. The response strategy for control and eradication of HPAI in poultry if an outbreak occurs starts on page 4-5, which includes plans for captive birds, wild birds, and other animals. Chapter four then explains the factors that could influence a response such as scale of the outbreak, rate of the outbreak, etc. on page 4-9. The last segment of explanation focuses on the international standards for Avian Influenza (p. -10).

Specific HPAI response critical activities/tool. The next chapter in the *USDA Red Book* explains the specifics of a HPAI response and the critical activities and tools used in the event of a HPAI outbreak. The chapter starts by explaining the laboratory definitions and case definitions on page 5-1. Surveillance, if an outbreak occurs, is then explained in specific detail distinguishing between passive surveillance and active surveillance (p. 5-9). Diagnostics is explained next with the effective and appropriate techniques used (p. 5-13). The epidemiological investigation and tracing is then discussed regarding the zones for area control (p. 5-17). Next, the *Red Book* explains how information management and reporting are done by the reporting and describes the tools used (5-23). Communication during an outbreak is explained briefly on page

(5-24). The threat of biosecurity and possible quarantine are explained in detail starting on page (5-28), and the importance of maintaining the poultry industry for the wellbeing of the overall U.S. economy is discussed on page (5-40). The rest of chapter five explains mass depopulation and euthanasia (p. 5-42), cleaning and disinfection (p. 5-45), vaccination (5-47), wildlife management and vector control (5-54), modeling assessment tools (5-55), and the appraisal and compensation aspect after a disease outbreak occurs (5-56).

Recovery after an HPAI outbreak. The final chapter of the Red Book explains how the United States takes steps to recover after an HPAI event. The first section explains what proof-of-freedom (proof the farm is void of HPAI) is, the surveillance needed, and the release of quarantined poultry (6-1). The next section of this chapter focuses on how to restock previously infected poultry farms by explaining sampling, guidance and approval processes, and the testing requirements (p. 6-5).

Appendices

The coders found the majority of appendices were dedicated to explanation. Appendix A explained the foreign animal disease preparedness and response plan materials to support HPAI response (p. A-1). Appendix B provided the laboratory network for HPAI (B-1). In Appendix C, an overview of the USDA secure poultry supply plan is provided (C-1). Appendix D gave an in-depth explanation of how an active HPAI outbreak surveillance guidance for

poultry functions (D-1). In Appendix H (H-1) the *Red Book* explains available Avian Influenza vaccines. The final appendix the coders found as explanation is Appendix I (I-1). This document explains the step-by-step process of the USDA response to HPAI.

Action

In the IDEA model, the final component is action. This aspect helps to answer questions about how individuals can specifically protect themselves during a crisis. Providing simple and basic protective instructions for the audience is crucial. Individuals want the ability to protect themselves, their loved ones, and their property during a crisis. Unambiguous instructions can help lessen the uncertainty felt by affected audiences. The main content the coders were looking for in the action segment of the IDEA model was the extent to which the USDA's *Red Book* was able to empower people to take specific, appropriate actions to avoid or mitigate an HPAI outbreak on their farms. Below are the main categories the coders found when looking at the action aspect.

HPAI outbreak response. The first element of the action component the coders found is shown in figure 5. This figure gives the poultry farmers specific actions that need to be taken in the first 72 hours for any HPAI response. This information could help the farmers self-protect their poultry farms.

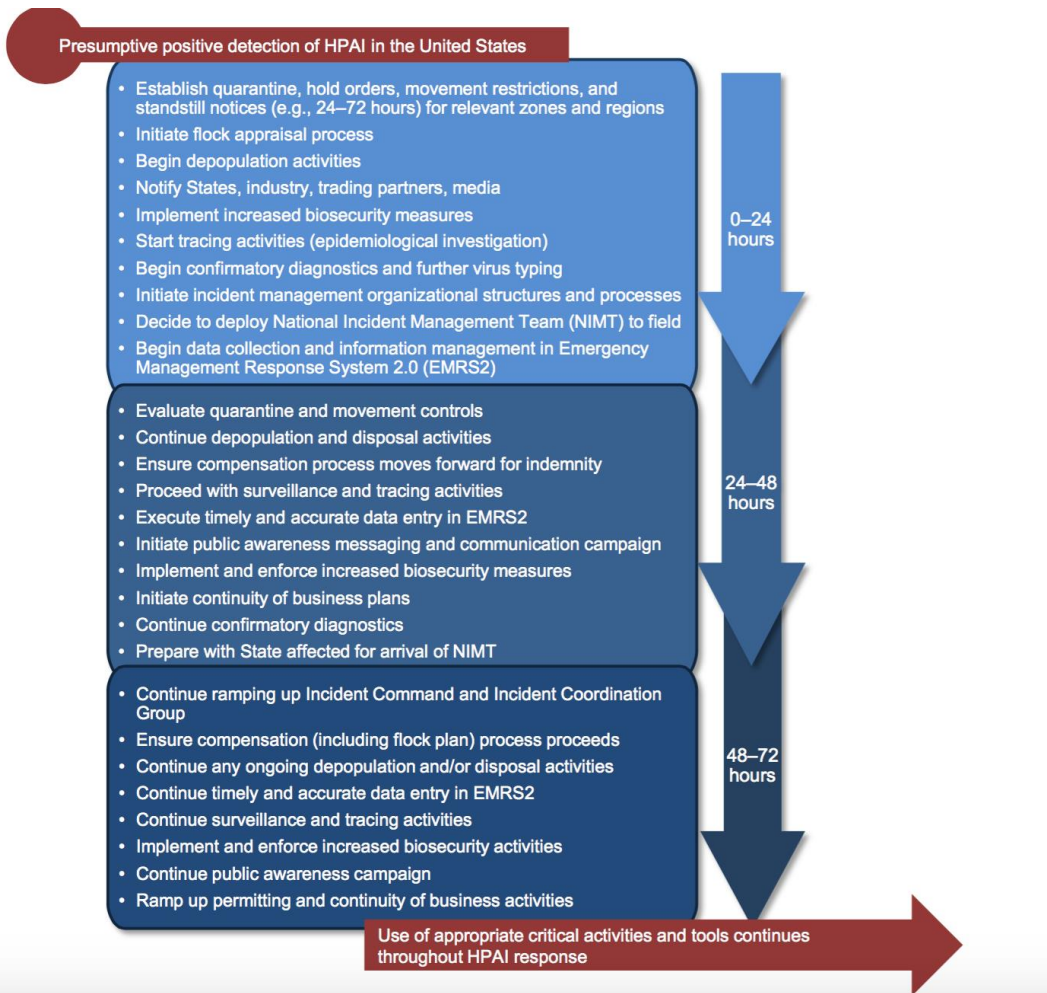


Figure 5 Critical Activities in the First 72 Hours of U.S. HPAI Response

Created by the USDA

Surveillance. This next sub-component of action identified by the coders was surveillance, found on page 5-6. The surveillance information offers the farmers an idea of what specific response steps would be recommended after an outbreak occurs. The *Red Book* provides four goals, stated below, of surveillance in response to an HPAI outbreak:

- Implement a surveillance plan within 48 hours of the confirmation of an outbreak
- Implement a surveillance plan that will (1) define the present extent of HPAI and (2)

detect unknown IP quickly.

- Consider susceptible wildlife populations in the surveillance plan; coordinate with APHIS WS, DOI, State wildlife agencies, and State agriculture departments to perform appropriate surveillance in wildlife populations.
- Provide complete surveillance data summaries and analyses at intervals specified by the unified IC (p. 5-7)

Biosecurity measures. The *Red Book* offers a box on page 5-30 about the biosecurity hazards of HPAI and the measures for mitigating them. The box shows specific biosecurity steps that can be taken when encountering biosecurity hazards. The box is shown below in figure 6.

Biosecurity Hazards	Biosecurity Measures to Mitigate Risk
<ul style="list-style-type: none">• Movement of poultry, other livestock, vehicles, equipment, and people.• Contaminated feed and water.• Contact with poultry and other HPAI-susceptible animals.	<ul style="list-style-type: none">• Clean and disinfect premises, vehicles, and equipment, and dispose of materials that cannot be disinfected in an appropriate manner.• Account for the movement of all poultry, livestock, and equipment for accurate records.• Provide a location for all individuals to carry out appropriate cleaning and disinfection procedures and insist these measures be followed.• Ensure that housed poultry remain housed and that entry of rodents, ground water, and wild birds is prevented.• Prevent close or direct contact between poultry and other species reared outside.

Figure 6 HPAI Biosecurity Hazards and Appropriate Biosecurity Measures

Created by the USDA

Quarantine/movement control. The Quarantine/Movement Control element of action in the *Red Book* provides a chart of how the movement of poultry should be handled in a HPAI

event. This detailed chart provides farmers with the ability to answer yes/no questions to gather information about steps they should take that are specific to their situation. The chart is found on page 5-37 of the *Red Book* and shown in figure 7.

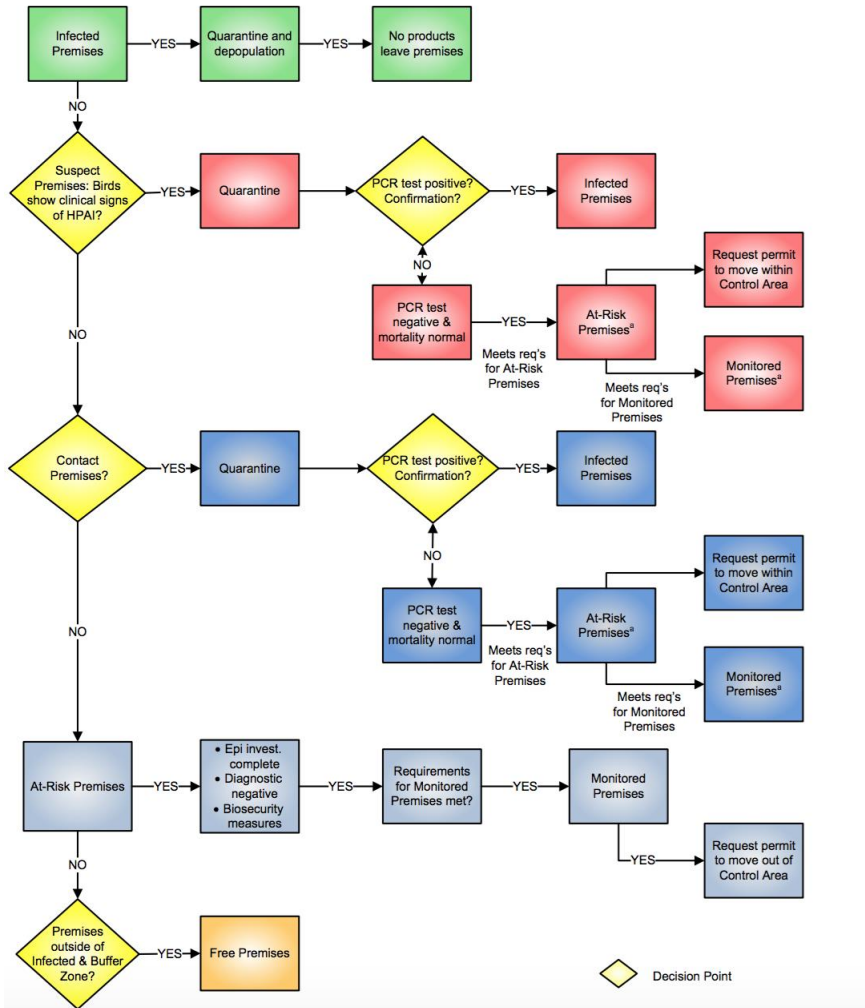


Figure 7 Premises Designations in Relations to Permitting and Movement Control

Created by the USDA

Ready reference guide. Another sub-component of action is a specific ready-guide for procedures and policy on page E-2, shown below in figure 8. This guide is an easy to understand

chart that helps the poultry farmers understand quickly the specific steps expected when an investigation of HPAI is occurring. The guide explicitly summarizes what is expected of the poultry famers.

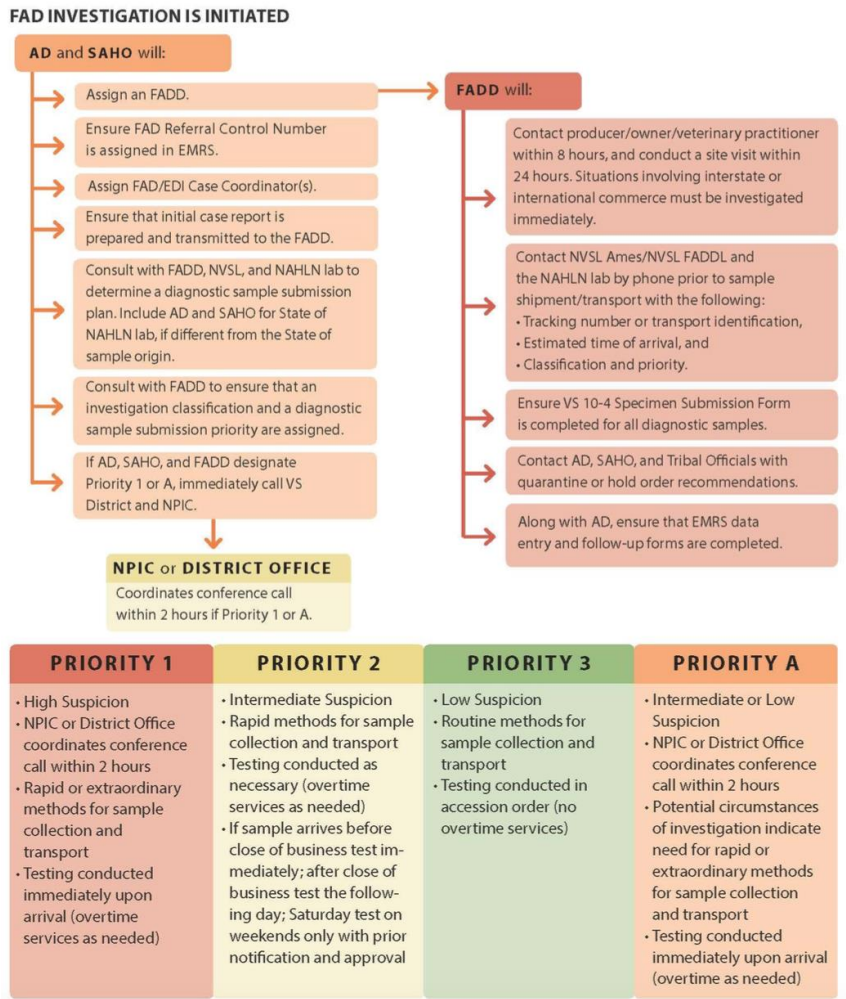
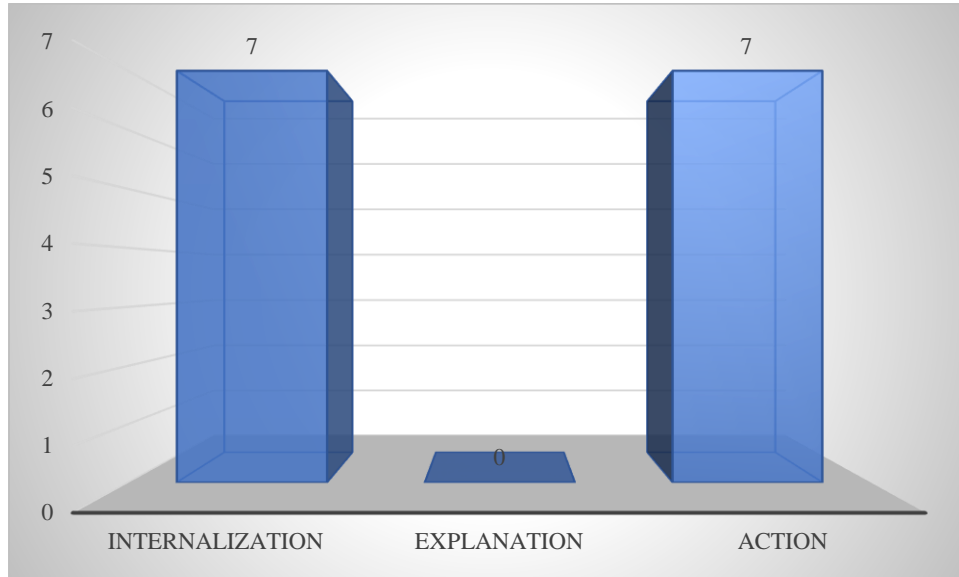


Figure 8 Ready Reference Guide

Created by the USDA

Results: Defend the Flock Campaign

Table 3 Defend the Flock Quotation Coding Results



Coding for the Defend the Flock campaign is based on the quotations provided in each graphic rather than column inches, as was done in the *Red Book*. Each quotation counted as an individual unit. Defend the Flock is a campaign put into place by the USDA. The campaign uses information provided by the *Red Book* to increase awareness and attention by using simple graphics. The USDA provides seven social graphics featured on the USDA website. Defend the Flock was created to help provide information and tools to educate and train everyone involved with poultry production about biosecurity practices. This campaign was analyzed and coded using the same codebook as was used to analyze the *Red Book*. Specifically, all of the seven-social graphics created by the USDA to relay information about HPAI were coded. The social graphics were coded strictly for the written text featured on each graphic. The pictures were not coded.

All seven of the social graphics were created using a uniform layout. On the right of the

graphics there is the Defend the Flock logo, followed by the slogan “Let’s keep our poultry healthy together.” Below the USDA website and logo, on the left side of all seven-social graphics is a specific, unique quote followed by a related image underneath. The coders divided the social graphics in half, identifying a component for the left side and the right side. The results found are summarized in Table 4. The coding revealed a balance in the amount of information provided for internalization and action, with very little explanation.

Coders found all seven individual slogans listed on the left side were part of the action element of the IDEA model. Each social graphic had a unique slogan, which offered tangible instructions. The coders defended their choice by arguing that each of the individualized slogans offered specific preparation steps which is a main requirement of the action component. The content instructs poultry farmers on how they can self-protect and prevent HPAI. In short, the social graphics are designed to empower the poultry farm owners to take appropriate actions to defend their flock against HPAI.

On the right side of the social graphics, the coders found there was a uniform message across all seven. The coders determined these messages were internalization. The coders defended their choice by referring to the personal relevance component of internalization. The messages were designed to gain the attention of the poultry farmers by showing a sign of unity. This content appeals to the personal relevance aspect of internalization by raising the point that the poultry farmers are part of “our poultry.” These messages are designed to cultivate a feeling that being affected is a possibility. An interesting discussion by the coders expressed how the action component of the social graphic enhanced the internalization component. The slogans give positive reinforcement or examples about what the poultry farmers can do to help self-protect their flocks. Each of the graphics for the Defend the Flock campaign are provided below

as Figures 9-15.



Figure 9 Social Graphic 1

Created by the USDA



Figure 10 Social Graphic 2

Created by the USDA



Figure 11 Social Graphic 3

Created by the USDA



Figure 12 Social Graphic 4

Created by the USDA



Figure 13 Social Graphic 5

Created by the USDA



Figure 14 Social Graphic 6

Created by the USDA



Figure 15 Social Graphic 7

Created by the USDA

Summary

This study sought to determine the extent to which the current instructional risk communication provided by the USDA about HPAI meets the expectations of the IDEA model. The *Red Book* and Defend the Flock campaign were analyzed to determine whether or not the components of internalization, explanation, and action were present. Thus, the IDEA model guided the coders with a specific framework to evaluate instructional risk messaging. The coders found varying results between each data set. The *Red Book* was coded as majority explanation, with little action. However, the Defend the Flock campaign was coded as majority internalization and action. This notable difference will be discussed in the next chapter.

CHAPTER FIVE: CONCLUSION

This study examined two data sets produced by the USDA for the ongoing threat of HPAI. The aim of the documents is to provide the poultry farmers and interested publics with knowledge and information about HPAI and the biosecurity risks associated with the disease. Specifically, the plan focuses on how to prevent HPAI and how to respond if an outbreak does occur.

A qualitative content analysis was used to examine the two documents. The IDEA Model (Sellnow, et al., 2017) was used as a guiding framework for the analysis. The results help to give an in-depth analysis of whether or not the risk messaging produced by the USDA covers all aspects recommended by the instructional risk communication literature. The IDEA model is an effective technique and framework to evaluate how well risk messages instruct audiences on protecting themselves, their loved ones, and their property from risks and crises. After analyzing the materials created by the USDA for HPAI responsiveness, this study has drawn conclusions that can be used to further improve the effectiveness of the HPAI campaign, specifically, and instructional risk communication in general.

Internalization

After in-depth analysis, the results of this study show internalization is present in the *Red Book* and heavily present in the social graphics of the Defend the Flock campaign produced by the USDA. The *Red Book* offered components of internalization such as personal relevance, proximity, and exemplification. A belief that one can be potentially harmed is a perceived risk, and is a central concept in health behavior research (Brewer, et. al., 2007). The *Red Book* provides a questionnaire (Chapter Four, Figure 4), which helps poultry farmers recognize

potential pathways for the disease to infect their flock. The ability for poultry farm owners to complete the questionnaire and provide personal and specific information about their farm can help increase the individual's perception of possible risk. The material created by the USDA can potentially increase the effectiveness of messaging by gaining the poultry farmers' attention. This attention raising is based on creating a feeling of personal relevance to the risk of HPAI.

The element of proximity is also present in the USDA *Red Book*. An example of the zones and areas around an outbreak are identified in Figure 2 of chapter four. This figure shows the poultry farmer how the surrounding areas are impacted when an outbreak occurs. The example gives insight about how an individual's farm can be affected even if the outbreak is happening some distance away. Over six miles surrounding the infected premise is considered the control area and can potentially lead to depopulation. The proximity element of internalization is shown by giving an example of how far away the event can be occurring and still have an effect on an individual's poultry farm.

Exemplification is another major element of internalization observed in the *Red Book*. Examples of exemplification can be positive or negative, as long as their aim is to gain attention and make the content memorable. The USDA *Red Book* offers examples of HPAI outbreaks on the local and federal level. Specifically, an example of the largest HPAI outbreak in 2014-2015 is discussed on page 1-7. This example is negative, however, it is memorable by stating that over 50.5 million commercial birds were either depopulated or succumbed to the disease. Exemplification helps the farmers internalize the disease by realizing how rapidly it can turn from a small case into a major crisis.

The Defend the Flock campaign was contained many references to internalization. The slogan "our poultry" was found to be an example of personal relevance and proximity. This

inclusive statement encourages the poultry farmers to recognize the need for the poultry industry to be united in preparing for and preventing HPAI. The potential for all poultry to be affected by a HPAI outbreak is an on-going risk being faced industry-wide. The proximity element, as discussed earlier, can be an example of how close the event is to occurring to an individual poultry farm. The high contagion and rate of spread of this disease makes it a threat to farms throughout an infected region. The social graphics do an adequate job of including the internalization component of the IDEA model. The Defend the Flock campaign can also be examined as an example of the recommendations presented in stage one of the CERC model. The campaign focuses on education before the crisis. The aim is to target the poultry production and surrounding poultry community through communication and an education campaign. This education leads to increasing self-efficacy by changing certain behaviors that can be a biosecurity risk.

Most health crisis literature focuses on the importance of having the audience internalize the risk (Reynolds & Seeger, 2005). Incorporating the internalization component of the IDEA model and stage one of CERC, can potentially raise the effectiveness of not only risk messaging for HPAI, but other high-contagion diseases. Looking at health-related issues, the instructional communication should include information about the personal relevance of the threat (Frisby, Veil, Sellnow, 2014). The *Red Book* and Defend the Flock campaign both have a strong presence of such personal relevance or internalization.

Explanation

The focus of the explanation component of the IDEA model is to provide accurate information about what is happening and what can be or is being done about the event. The

majority of the Red Book was identified by the coders as explanation. HPAI is a unique disease that is surrounded by many unknown variables (USDA, n.d.). Uncertainty is unavoidable in most risk situations; however, learning can help to manage uncertainty (Moynihan, 2008). The USDA provides abundant information about this disease in the *Red Book*. Seeking information about a health-related issue is a key coping strategy (Lambert & Loiselle, 2007). This being known, the *Red Book* serves an important explanatory purpose for poultry producers.

As stated, the majority of content in the *Red Book* is explanation. Although this information is helpful in answering many questions about the nature and origin of HPAI, much of the content is also complex. This complexity may hamper the effectiveness of the *Red Book* to fulfill its communication objectives. Simply put, explanation is only effective if it is comprehensible by the intended audience (Sellnow & Sellnow, 2010). The sheer volume of explanatory information in the *Red Book* creates a potential difficulty for the intended audience to quickly and easily find answers to their questions about HPAI. This tendency to provide excessive explanatory material is a repeated pattern that has been noted in previous research (Frisby, et al., 2014; Sellnow-Richmond, et al., 2018). Specifically, as discussed in chapter two, many organizations provide ample explanation in risk messages and a dearth of recommendations for individual actions. The effectiveness of overwhelming explanation and a lack of other components of the IDEA model is questionable.

The ample amount of explanatory information provided about HPAI in the *Red Book* was not, however, translated into risk messages for the Defend the Flock campaign. By contrast, the Defend the Flock campaign had very few instances of explanation. As stated above, the CERC model stage one focuses on educating the publics through communication and education campaigns. The lack of explanatory information may diminish the impact of the Defend the

Flock campaign unless the campaign is viewed in tandem with the USDA's *Red Book*. Even if both sources of explanation are viewed together, the complexity and profusion of explanatory information could make interpretation difficult.

Action

The action element of the IDEA model was present in both documents. However, recommendations for action were more prevalent in the Defend the Flock campaign than the *Red Book*. The actions covered in the *Red Book* were general in nature. The actions that were specific to poultry farmers, such as Figure 5 from Chapter 4, described the actions needed in the first 72 hours for any HPAI response. In the *Red Book*, action could have been more in line with the IDEA model if, after explaining a topic, specific instructions to what the poultry farmers can do to prevent the outbreak of HPAI were added. For these recommended actions to be effective, however, the individual must believe that she or he has the self-efficacy or capacity to complete the actions. As Bandura (1977) explained, self-efficacy is strongest when the audience understands how the risk affects them, whether they understand what needs to be done, whether or not they believe they can complete the necessary actions, and whether or not they are motivated to take action. When given specific achievable instructions, individuals are more inclined to use or act upon the recommendations. General discussion of actions that are taking place or that need to take place are less likely to inspire audiences (Murray-Johnson & Witte, 2003). The extensive explanatory information provided in the *Red Book* presents an opportunity to offer relevant and specific action steps. Unfortunately, this opportunity has not yet been embraced by the USDA.

The social graphics in the Defend the Flock campaign are far more fitting with the recommendations for action in the IDEA model. These actions in the Defend the Flock campaign are clearly stated and easy to comprehend in all seven of the social graphics. The social graphics produced for the USDA's Defend the Flock campaign also provide effective examples of what is recommended in CERC stage one. The risk messages need to list actions to focus on changing the behavior of an individual. The messages created in the Defend the Flock campaign are specific steps to take in preventing HPAI, which result in increasing self-efficacy (Bandura, 1977). In each of the seven social graphics produced, a specific action was offered. The USDA was efficient in translating the ample information in the *Red Book* into specific actions the poultry farmers could take. For example, the major biosecurity risk discussed in the *Red Book* is the rapid spread and high-contagion of HPAI. One social graphic slogan stated, "Change clothes before entering the poultry areas and prior to exiting the farm." This simple instruction can be understood and performed to prevent the rapid spread of HPAI.

Practical Applications

This analysis has yielded several practical applications for risk communication practitioners. The following lessons can provide guidance when looking at risk messaging regarding a potential disease outbreak.

Lesson 1: The ability of the targeted audience to internalize the risk messaging is crucial. Many individuals are over-whelmed with the amount of risk messaging they face (Sellnow & Sellnow, 2010). A framework of the internalization component of the IDEA model and stage one of the CERC model can help guide these risk messages. The targeted audience must care about the likelihood they will come in contact with the health-issue. This objective cannot be met, however, unless the intended audience can quickly and easily comprehend the information.

Lesson 2: The intertwining of explanation and action can be challenging when creating risk messaging. The explanatory information should be ample and easily accessible. However, it must also be translated in a language the targeted audience is able to understand. The explanation of the risk should be accompanied with specific instructions the individual can follow. Whether these action steps are minor or major, they can help individuals increase their perceptions of self-efficacy and decrease uncertainty. The key is to not privilege explanation over the other two components, internalization and action. Previous literature has shown the negative impact of having the majority of risk messaging as the explanation component (Frisby, et al., 2014) and the benefits of messages that include a balance of the IDEA model components (Sellnow, et al., 2017).

Lesson 3: Providing complementary materials may assist individuals in rapidly seeking and comprehending instructional risk messages. Although both USDA documents have weaknesses identified in this study, the fact that poultry farmers have both the highly visual and brief *Defend the Flock* graphics and the *Red Book* readily available creates a potential synergy. The brief, highly visual material offers quick advice, while the longer, more detailed document presents thorough explanations. Combining documents in this manner has potential to increase the impact of instructional risk communication messages. Below, Table 4 provides a summary of the three lessons learned in this study.

Table 4 Practical Applications

Practical Applications	Current Gap in Instructional Risk Messaging	Recommendation
Lesson 1	Lack of internalization by audience	Integrate both the IDEA model and CERC stage one
Lesson 2	Overwhelming privilege of explanation	Intertwine action or specific instructions, once information is explained
Lesson 3	Weakness in individual documents	Potential synergy offered among multiple documents provided

Limitations and Suggestions for Future Research

This study has several limitations. First, this study focused on an evaluation of only three components of the IDEA model on the USDA’s prevention and response to HPAI. The distribution component was not analyzed in this study. As such, this study was limited to an assessment of the educational materials provided for poultry producers and not the distribution channels used. In future research, the effectiveness of channels through which the USDA delivers the information could be studied. Thus, future assessment of the material could include the ease of interaction between the intended publics and the materials analyzed. This study also did not focus on the pictures presented in the seven-social graphics featured in the *Defend the Flock* campaign. This exclusion of visual materials limited the study to only written text when applying the IDEA model. Future assessment of this campaign could feature visuals as well to expand the framework of the IDEA model.

A suggestion for future research could focus on how the poultry farmers perceive and use the information provided. The ability to gauge how the *Red Book* and Defend the Flock campaign triggers self-efficacy by poultry farmers could be crucial. This opportunity could increase the effectiveness of the materials by addressing main concerns and questions the

targeted audiences have about the structure of materials produced by the USDA. Such research could offer specific recommendations for how to improve the risk messaging.

Conclusion

The United States Department of Agriculture and poultry farms across the U.S. are currently being challenged by HPAI. The effectiveness of risk messaging is crucial in order to prevent and control the disease. The *Red Book* and Defend the Flock campaign do a sufficient job of relaying the risk messaging. However, there are improvements shown by the IDEA model that could be made to increase the effectiveness of these documents. The lessons learned through this assessment of the USDA's communication efforts to combat HPAI also have the potential to inform others who are working to prevent similar health-related crises from impacting our economy and overall well-being.

APPENDIX A
CODEBOOK

Codebook

1. Internalization

Goal: To get attention and to aid retention.

Question: Am I (or those I care about) affected and how?

a. Personal Relevance

- How likely am I (or those I care about) to be affected?
- What and how severe might the consequences be?

b. Proximity

- Where is the event occurring and how close is that to me and/or those I care about?
- Is location specified and to what specificity?

d. Timeliness

- When is the event occurring?
- How much time do I have to prepare?
- How much time is there to respond if exposed?
- How much time is there to respond if infected?

e. Exemplification

- Are there any positive examples offered to get attention and make it memorable?
- Are there any negative examples offered to get attention and make it memorable?

3. Distribution

Goal: Reach appropriate audiences efficiently through convenient channels.

Question: How is this information being distributed?

a. Distribution Channels

-Traditional media

b. Convergence of multiple messages being sent through different channels.

3. Explanation

Goal: Provide accurate information about what is happening and being done about the event.

Question: What is happening and why?

- a. Source credibility
- b. Accurate science, accurate information
- c. Intelligible translation for target audience?
- d. Are examples used to make complex information easier to understand?

4. Action

Goal: To empower people to take appropriate actions to save lives.

Question: What should I (and those I care about) do (or NOT do) for self- protection?

- a. Specific preparation action steps
- b. Specific response steps
- c. Examples in action steps?

APPENDIX B
COPYRIGHT LETTER

April 9, 2018

JENNA JONES – UNIVERSITY OF CENTRAL FLORIDA

Contact: jenna.l.jones@knights.ucf.edu

Dear Dr. Timothy Sellnow and Dr. Deanna Sellnow:

I am requesting permission to reprint the visual representation of the IDEA Model (T. Sellnow & D. Sellnow, 2013).

My study's title is "USDA Instructional Risk Messages for High Pathogen Avian Influenza". It is a thesis submitted in partial fulfillment of the requirements for the degree of Master of Arts in Communication, in the Nicholson School of Communication, in the College of Sciences, at the University of Central Florida. The graphic will be used on Chapter 2, page 14.

I believe that you are currently the holders of the copyright, because the original work states that copyright is held in your name. Your consent confirms that you hold the right to grant this permission.

This request is for a non-exclusive, irrevocable, and royalty-free permission, and it is not intended to interfere with other uses of the same work by you. I hope that you will support our study by granting this permission. I would be pleased to include a full citation to the work and other acknowledgement as you might request.

Please sign the letter where indicated below.

Sincerely,
JENNA L. JONES

Permission is hereby granted:

Signature: Deanna D. Sellnow
Name & Title: Deanna D. Sellnow, Professor of Strategic Comm.
Signature: Timothy L. Sellnow Timothy L. Sellnow
Name & Title: Professor of Strategic Communication
Company/Affiliation: University of Central Florida Date: 6/13/18

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