

University of San Diego

Digital USD

Dissertations

Theses and Dissertations

2009-05-01

Development and Psychometric Evaluation of the Provider Response to Emergency Pandemic (PREP) Tool

Linda Suzzanne Good PhD
University of San Diego

Follow this and additional works at: <https://digital.sandiego.edu/dissertations>



Part of the [Nursing Commons](#)

Digital USD Citation

Good, Linda Suzzanne PhD, "Development and Psychometric Evaluation of the Provider Response to Emergency Pandemic (PREP) Tool" (2009). *Dissertations*. 373.
<https://digital.sandiego.edu/dissertations/373>

This Dissertation: Open Access is brought to you for free and open access by the Theses and Dissertations at Digital USD. It has been accepted for inclusion in Dissertations by an authorized administrator of Digital USD. For more information, please contact digital@sandiego.edu.

UNIVERSITY OF SAN DIEGO
Hahn School of Nursing and Health Science
DOCTOR OF PHILOSOPHY IN NURSING

DEVELOPMENT AND PSYCHOMETRIC EVALUATION OF THE
PROVIDER RESPONSE TO EMERGENCY PANDEMIC (PREP) TOOL

By

Linda Suzanne Good

A dissertation presented to the
FACULTY OF THE HAHN SCHOOL OF NURSING AND HEALTH SCIENCE
UNIVERSITY OF SAN DIEGO

In partial fulfillment of the
Requirements for the degree
DOCTOR OF PHILOSOPHY IN NURSING

May 2009

Dissertation Committee
Jane M. Georges, PhD, RN, Chair
Lois Howland, DrPH, MS, RN
Donna Agan, EdD

Abstract

Background: History and science would suggest that a worldwide influenza pandemic is near and its implications are on the minds of healthcare workers (HCWs). Previous studies revealed that HCW have loss-related fears and concerns associated with working during a disaster, especially one with a biologic component. Most healthcare organizations have well-crafted disaster plans in place; however, these plans often rely on the assumption that HCWs will report to work as usual, which may not be the case.

Objective: The purpose of this study was to determine if HCWs' fears and concerns are a predictor of their willingness to report to work (RTW) during a sustained biologic emergency. To achieve this, the Provider Response to Emergency Pandemic (PREP) Tool was developed, piloted, and evaluated. **Methods:** The 31 PREP Tool items were based on four *Loss*- subscales plus five exploratory items using a four-point Likert format. In addition, the survey included 11 demographic questions. The PREP Tool was constructed by an expert panel and pretested with a focus group. The instrument was then pilot tested with a cross-sectional convenience sample of 452 HCWs over a 3-month period. **Setting:** The principle investigator administered the PREP Tool survey during staff meetings at a midsized acute care hospital in the southwestern United States. **Data analysis:**

Descriptive statistics, reliability assessment, correlations, and exploratory factor analysis were used. **Results:** The Cronbach's alpha reliability coefficient for each *Loss*-subscale to the total score was between .81 and .85. All items retained demonstrated correlation with the RTW response (Spearman's rho; $p < .001$) and the ability to distinguish between *yes*

and *no* RTW responses (Mann-Whitney U ; $p < .05$). Exploratory factor analysis was useful in evaluating item retention. **Conclusion:** The PREP Tool is a valid instrument for the assessment of HCW RTW concerns and intentions in a biologic emergency.

Implications: This study provides new insights into the HCW RTW decision and introduces an instrument designed to evaluate this largely unexplored aspect of healthcare. Results from this research and future PREP Tool-based studies can inform evidence-based disaster planning.

May 2009

Linda Suzanne Good

©

ALL RIGHTS RESERVED

DEDICATION

To the memory of my mother, Suzzanne Brewster, who passed away just 4 months before seeing me graduate. She was always so proud that I was a nurse and her love and support was a blessing.

To my father, Donald Brewster, who has always exemplified the value of strong character and of a job well done. I am grateful for his influence and presence in my life.

To my husband, Rae Good, whose support and encouragement has been unwavering from the first day I came home with this dream.

ACKNOWLEDGMENTS

I would like to thank the many people who have played a role along the journey of my doctoral education and this dissertation.

I give special acknowledgement to Dr. Jane Georges, my dissertation chair, who has been an encouragement to me both past and present.

Thank you to Dr. Lois Howland who generously shared her expertise and guidance in the dissertation process.

My gratitude goes to Dr. Donna Agan, who as she mentored me along the way evolved from teacher, to colleague, to friend.

I am grateful to the leadership of Scripps Health and their commitment to excellence, their vision for the value of doctorally prepared nurses, and for allowing me the privilege of this experience.

Table of Contents

	Page
Abstract	i
Dedication	iv
Acknowledgements	v
List of Tables	xiii
List of Appendices	xiv
Chapter 1 Introduction	1
Background and Significance of the Problem	1
Purpose of the Study	2
Conceptual Measurement Model	2
Implications for Nursing Practice	4
Chapter 2 Review of the Literature.....	6
Loss in Disaster.....	6
Healthcare Workers' (HCWs) Response to Loss in Disaster	8
Loss of Order: HCWs Response to Chaos	8
General Responses to Chaos and Trauma.....	8
Preparation and Communication.....	10
Fear of Being Overwhelmed	12
Ethical Challenges	12
Loss of Security: The HCWs Response to Disruption during Disaster	14
HCWs' Perception of General Hospital Safety	14
Response to a Biologic Disaster	14

Personal Safety Needs.....	15
Psychosocial Safety Needs	16
Loss of Trust: HCWs' Perceptions of Institutional Support.....	17
Previous Experiences	17
Reputation for Honesty	18
Visibility of Leadership	19
Loss of Freedom of Choice: HCWs Reaction to Being Confined to the	
Workplace and the Decision to Report to Work.....	20
Choice to Report to Work.....	20
Choice to Leave Work	21
Choice of Priorities	21
Biologic Disaster: Pandemic Influenza.....	22
The Influenza Challenge.....	22
The Pandemic Influenza Threat	23
The Effect of a Pandemic	24
The Effect of a Pandemic on Healthcare.	24
Summary	25
Chapter 3 Methodology	26
Development of the PREP Tool.....	26
Item Generation and Development	27
Instrument Development Team.....	27
Introductory Scenario.....	28
Theme-based Items	29

Demographic Questions.....	29
Scaling Format and Rationale.....	29
Instrument Evaluation.....	30
Validity Estimation	30
Reliability Evaluation	31
Focus Group Pretest Evaluation.....	31
Pilot Administration of the PREP Tool	32
Setting	33
Population and Sample	33
Protection of Participants/Human Subjects	33
Minimizing Participant Risk	33
Confidentiality of the Data	35
Data Collection	35
Data Analysis of the PREP Tool Pilot Study.....	37
Phase 1: Descriptive Analysis of Participation.....	37
Phase 2: Psychometric Analysis of PREP Tool Survey Items.....	37
Descriptive Analysis	37
Reliability Assessment.....	38
Correlations.....	38
Comparison of Yes-RTW and No-RTW Groups.....	39
Respondent Characteristics.....	39
Phase 3: Exploratory Factor Analysis of PREP Tool Instrument.....	39
Factor Extraction.....	40

Factor Rotation.....	41
Logistic Regression.....	41
Summary	41
Chapter 4 Results	42
Phase 1: Descriptive Analysis of Participation	42
Overview	42
Departments Represented	44
Job Categories Represented	44
Description of Participants.....	44
Gender.....	44
Work Shift.....	44
Hourly versus Salaried/Exempt Status.....	44
Home Responsibilities	45
Years in Profession and Years at the Hospital.....	46
Age of participants	46
Phase 2: Psychometric Analysis of PREP Tool Survey Items.....	47
Descriptive Analysis	47
Reliability Assessment.....	48
Correlation	50
Inter-scale Correlation	50
Respondent Characteristic Correlation	51
Comparison of Yes and No Responses on the RTW Item.....	51
Spearman’s Rho Analysis.....	51

Mann-Whiney U Median Analysis	53
Respondent Characteristics in Relation to RTW Decision	55
Phase 3: Exploratory Factor Analysis of PREP Tool Instrument	57
Factor Extraction.....	57
Factor Rotation.....	58
Logistic Regression.....	60
Reassessment Following Exploratory Factor Analysis	63
Summary	67
Chapter 5 Discussion	69
Discussion of Findings Related to PREP Tool Development.....	69
Establishing Validity.....	69
Construct Validity	69
Internal Validity	70
External Validity	70
Statistical Conclusion Validity	71
Identification of Fears and Concerns (Study Aim 1).....	71
Loss of Order	72
Loss of Security	72
Loss of Trust	73
Loss of Freedom	73
Conclusion	73
Developing the PREP Tool (Study Aim 2	74
Fears and Concerns and the RTW Decision	74

Conclusion	74
Discussion of Individual Survey Items	75
Overview of Analysis Methodologies	75
Reliability Assessment.....	76
Correlation with the RTW Response	77
Comparison of Yes and No Responses on RTW Item.....	77
Exploratory Factor Analysis	77
Loss of Oder Subscale Items.....	77
Loss of Security Subscale Items	78
Loss of Trust Subscale Items	79
Loss of Freedom Subscale Items	80
Sense of Duty Subscale Items.....	82
Factor Analysis Themes.....	83
Factor 1: Order and Security.....	84
Factor 2: Sense of Duty.....	84
Factory 3: Trust in Leaders	84
Factor 4: Personal Protection	85
Factor 5: Work Role.....	85
Factor 6: Fears and Concerns.....	85
Limitations	86
External Validity	86
Shifts Represented	86
Language Limitations	86

Management Presence	87
Site Bias	87
Implications for Nursing and Recommendations for Future Research.....	88
Implications for Theory	88
Implications for Practice	88
Implications for Future Research.....	89
Testing the Finalized PREP Tool.....	89
Future Use of the PREP Tool.....	89
Expansion of Study	89
Exploration of Concepts	90
Summary	90
References.....	92
Appendix A Themes and Corresponding PREP Tool Survey Items	99
Appendix B PREP Tool Survey Packet	101
Appendix C Focus Group Participant Information and Consent Form	106
Appendix D PREP Tool Pretest Interview Guide.....	107
Appendix E Focus Group Observations	108
Appendix F Institutional Review Board Approval University of San Diego	112
Appendix G Institutional Review Board Approval Scripps Health.....	113
Appendix H Human Participant Protection Completion Certificate.....	114
Appendix I Final Version of the PREP Tool	115

LIST OF TABLES

Table 1 Domains of Functioning Affected by Traumatic Events	10
Table 2 Demographic Profile of PREP Tool Pilot Participation	43
Table 3 Relationship of Adult Dependents in the Home	45
Table 4 Types of Pets in the Home.....	46
Table 5 Age of Participants.....	47
Table 6 Response Frequency and Cronbach's Coefficient Alpha on PREP Tool Items ..	49
Table 7 Inter-scale Correlations.....	50
Table 8 Correlation between PREP Tool Items and the Yes RTW Response.....	52
Table 9 Comparison of Yes and No Responses on the RTW Item for Each PREP Tool	54
Table 10 Comparison of Subscale Scores and Yes and No Responses on the RTW Item	55
Table 11 Respondent Characteristics Linked to RTW Decision	56
Table 12 Rotated Component Matrix and Factor Loadings.....	59
Table 13 Individual Items Most Predictive in the Report to Work Decision	60
Table 14 Original Subscale Report to Work Predictability	61
Table 15 Factor Analysis Theme Subscales and Report to Work Predictability	62
Table 16 Reliability Analysis of Factor Analysis Theme Subscales and Highly Predictive Items.....	64
Table 17 Recalculated Cronbach's Coefficient Alpha (Revised Version)	66
Table 18 Recalculated Inter-scale Correlations (Revised Version).....	67
Table 19 Comparison of Analysis Results for PREP Tool Items	76

LIST OF FIGURES

Figure 1 Conceptual Model for the PREP Tool.....	3
Figure 2 Scree Plot for PREP Tool Data	58

CHAPTER 1

Introduction

Background and Significance of the Problem

In the aftermath of 9-11, anthrax-laced letters, devastating hurricanes, and constant news of emerging illnesses and world turmoil, the possibility of facing a disaster event feels very real to healthcare workers (HCWs). Most health care systems have a well-crafted disaster plan in place; however, these plans often rely on the assumption that HCWs will report to duty outside their normal working pattern. A review of previous large-scale mass casualty incidents revealed a gap between this assumption and the actual intentions of HCWs. This gap widened if the disaster involved a contagious disease component (Syrett, Benitez, Livingston, & Davis, 2006). Missing from these discussions was an exploration of the added burden of a sustained event as would be experienced in a pandemic flu disaster.

Considering the critical role of hospital-based HCWs, O'Boyle, Robertson and Secor-Turner (2006) studied the beliefs, concerns and feelings of nurses who anticipated that they would be expected to work during a biological disaster event. The disturbing result was an over-arching theme: fear of abandonment. Anticipation of loss of order, loss of security, loss of trust, and loss of freedom contributed to HCWs' fear of abandonment. First person accounts by HCWs who had been on duty during actual disasters confirmed that these losses were often very real, reinforcing a sense of abandonment by their hospital

organization (Fager, 2006; French, Sole & Byers, 2002; Moore, Gilbert, Saunders, Bryce & Yassu, 2005; Powell-Young, Baker & Hogan, 2006). As a consequence of this fear, there was a reluctance to report to work in a disaster (Irvin, Cindrich, Patterson, Ledbetter & Southall, 2007; Kruus, Karras, Seals, Thomas & Wydro, 2007; O'Boyle et al., 2006; Qureshi et al., 2005). Naturally, when faced with a disaster, fear and apprehension exist but a confidence that these factors have been addressed may lead to an increased willingness to report to work.

Purpose of the Study

The purpose of this study was to determine if HCW's fears and concerns are a predictor of their willingness to report to work during a sustained biologic emergency.

The following aims were addressed:

Aim 1 To identify fears and concerns HCWs have in regard to working during a sustained biologic emergency.

Aim 2 To develop an instrument designed to study the relationship between these fears and concerns and the HCW's reporting to work decision.

This researcher-developed instrument, known as the Provider Response to Emergency Pandemic (PREP) Tool, will be used in future research, the results of which could inform the development of *next generation* disaster planning.

Conceptual Measurement Model

Construct validity of the PREP Tool was analyzed using exploratory factor analysis on the pilot study data. Confirmatory factor analysis will be performed on future administrations of the finalized tool. This approach allowed a data-driven determination of which latent variables were underlying the set of items. The results of this factoring

process were clusters of linear combinations of items known as factors. In order to apply factor analysis, a measurement model was needed to depict the hypothesized relationship between variables.

Soeken, in Waltz, Strickland and Lenz (2004) specified how these variables are depicted in a factor analysis model. Measured variables or scale items (referred to as indicators or observed variables) were depicted in the diagram by squares or rectangles. Constructs or factors (referred to as latent variables or unobserved variables) were represented in the diagram by circles. Relationships between variables were depicted with directional arrows. Figure 1 represents the conceptual measurement model for the PREP Tool development.

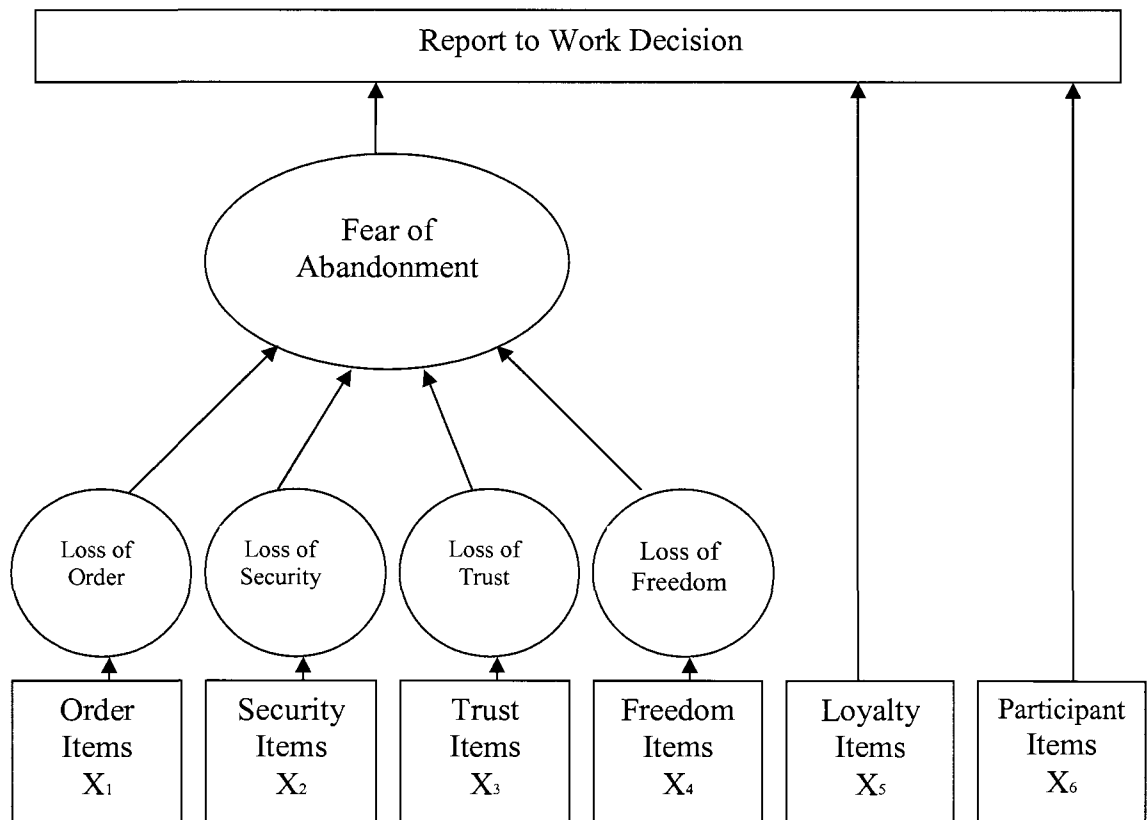


Figure 1. Conceptual Model for PREP Tool Development

In this study, the overarching theme was the latent variable *fear of abandonment*, divided in to four construct *Loss*-themes: Loss of Order, Loss of Security, Loss of Trust, and Loss of Freedom. Each construct theme was measured by five to eight items/indicators developed for this instrument. In addition to the *Loss*-theme-based indicators, the PREP Tool included five exploratory scale items on Sense of Loyalty/Duty and eleven items designed to assess Respondent Characteristics. Analysis of the *Loss*-theme-based indicators achieved study Aim 1, to identify fears and concerns HCWs have in regard to working during a sustained biologic emergency. Examining the relationship between the decision to report to work and all participant responses, including *Loss*- theme responses, exploratory Sense of Loyalty/Duty responses, and Respondent Characteristic responses were key in achieving study Aim 2, the development of the PREP Tool.

Implications for Nursing Practice

Although many aspects of disaster defy predictability and are out of one's control, HCWs' anticipation of such an event with fear of abandonment and refusing to report to work need not be an inevitability. Currently, a deficit exists between qualitative understanding of this issue and quantitative evaluation. The PREP Tool bridges this gap, providing an instrument which can be used by hospitals to assess their employees' concerns and intentions. Results could be beneficial to the organizations in several ways. First, identifying specific areas of confidence (or lack of confidence) in HCW's perception of existing disaster plans could provide opportunities for evidenced-based strategic planning. Second, by channeling resources and education towards actual identified needs could result in a more focused and practical disaster response plan. A

third implication for practice is the opportunity to gain measurable insight into predictors of the report-to-work decision. This information could allow hospitals to mitigate factors which they can influence and to plan-around factors which they can not. This is crucial in any disaster event, all the more so in a sustained disaster scenario, such as an influenza pandemic. Acting upon the insights gained from a PREP Tool assessment could result in a stronger, more achievable disaster plan, carried out by a loyal, more confident staff, resulting in a safer, more protected community.

CHAPTER 2

Review of the Literature

The purpose of this chapter was to review a selection of literature relevant to the development of the PREP Tool. This review of the literature focused on three key topics: First, an overview of the concept of disaster-related loss as it was used in this study. The second topic of the literature review was an exploration of the healthcare worker's (HCWs) response to disaster loss, grouped as four factors: Loss of Order, Loss of Security, Loss of Trust, and Loss of Freedom. The third section of the literature review focused on the biologic disaster of pandemic influenza, chosen as the scenario upon which the PREP tool items were based.

Loss in Disaster

Disaster and loss go hand in hand, both general phenomena encompassing a wide range of traumatic events and experiences. Murphy (1989) elaborated on this connection by describing disaster as uncontrollable traumatic events that affect individuals in varying degrees as they experience related losses. *Traumatic* is a key component in this definition, derived from the Latin word for wound. Individuals who have experienced the loss associated with disaster events often emerge with the body, mind, and spirit wounded. Traumatic disaster has been explored widely by researchers, across many disciplines. Studies of World War II and Vietnam veterans illustrate the effect of war-associated disaster loss (Leifer & Glass, 2008; Walsh, 2007). The phenomena of loss has

been investigated in relation to victims of catastrophic natural disasters, including earthquakes (Chiang & Wear, 2003; Sattler, et al, 2006), hurricanes (Giarrantonio, Orlando, & Savage, 2008), volcanic eruption (Murphy, 1989), and fire (Keane, et al., 2002). In addition to natural disasters, loss related to intentional disasters, such as terrorist attacks have been explored (Hayward, 2003; Hobfoll, Tracy, & Galea, 2006; Grieger, Fullerton, & Ursano, 2004; Riba & Reches, 2002).

Murphy (1987) reviewed two classic models of individual responses to disaster loss and developed a third. The first, presented in 1952 by Powell and Rayner is known as a sequential model and included warning, threat, impact, inventory, rescue remedy, and recovery. The second model developed by Berren, Beigel, Ghertner, and Baher in 1980 considered five factors: Type of disaster, degree and duration of personal impact, potential for recurrence, and control over future impact. Neither of these early models allowed for the testing of linkages between proposed constructs. Therefore, Murphy developed an explanatory model for recovery from disaster loss which allowed an empiric dimension to disaster loss research. The conclusion of all three investigations was that recovery from human responses to disaster loss is a long term process, requiring resolution of many physical and psychological factors. This conclusion continues to be supported in subsequent disaster loss research (Beaton & Murphy, 2002; Hasin, Keyes, Hatzenbuehler, Aharonovich & Alderson, 2007; Holloway, Norwood, Fullerton, & Ursano, 1997; Norris, 2002; Walsh, 2007).

Common to most studies in the area of disaster loss is the focus on the victim or patient impacted by the disaster event. Few studies consider the loss experienced by

HCWs on duty in the disaster's aftermath. The following section will bridge this gap with a review the HCW's disaster loss experience.

Healthcare Worker Response to Loss in Disaster

Loss of Order: HCWs Response to Chaos

HCWs who practice in the hospital setting are accustomed to order and can generally expect more predictability and routine than their home health or public health colleagues. In fact, orderliness in the hospital work environment is a factor shown to be associated with both job satisfaction and safe work practices (Gershon et al., 2000). When disaster strikes, a major disruption to this orderly environment occurs affecting the HCW in a number of ways.

General responses to chaos and trauma. A review of the literature related to previous disasters enabled learning from past experience. Beaton and Murphy (2002) summarized what was known about the acute and chronic psychosocial sequelae following natural and man-made disasters, combat, and terrorist attacks. Their analysis included a global perspective, including exemplars from the Israeli Gulf War experience, the Tokyo sarin gas attack, as well as American domestic disaster events. Despite differences in geographic location, caregivers' responses to these traumatic events were similar. The extent of reactions varied from one HCW to another and was influenced by a wide range of variables. One factor was the degree to which the individual was directly affected by the emergency event. A study of 212 Pentagon staff members indicated that respondents who were in or near the Pentagon at the time of the September 11, 2001 attack were more likely to have post traumatic stress disorder (PTSD) and major depression than co-workers who were at other locations (Grieger et al., 2004). Interviews

with occupational health nurses directly involved in the aftermath of the September 11, 2001 attacks at *Ground Zero* and the Pentagon gave further insights into primary traumatic stress. Residual post-event effects included fear of returning to the site, sleep disorders, eating problems, grief and a new sense of vulnerability in their place of work and community (Lukes, 2002).

Even HCWs who did not have on-scene involvement in the disaster event could experience secondary traumatic stress from knowing about or interacting with a traumatized, suffering person (Green, 1994). Experiencing either primary or secondary traumatic stress could result in adverse health responses. Beaton and Murphy (2002) identified the four major domains of human response following traumatic exposure, summarized in Table 1. Understanding these responses to actual traumatic events gives insight into the anticipatory stress expressed by HCWs as they contemplate being called upon to work during a disaster event.

Table 1

Domains of Functioning Affected by Traumatic Events

Domain	Responses
Emotional	Shock, terror, guilt, horror, irritability, anxiety, hostility, depression
Cognitive	Inability to concentrate, confusion, self blame, intrusive thoughts (e.g., flashbacks) about the experience, decreased sense of self efficacy, fear of losing additional control over life events, fear of reoccurrence of the event
Biological	Sleep disturbances (e.g., insomnia, nightmares), exaggerated startle response, psychosomatic symptoms
Behavioral	Avoidance, social withdrawal, interpersonal stress (e.g., decreased intimacy and lowered trust in others), substance abuse.

Note. Summarized from "Psychosocial responses to biological and chemical terrorist threats and events."

By R. Beaton and S. Murphy, 2002, *AAOHN Journal*, 50(4), p. 182-189. Copyright 2002 by AAONH.

In addition to expected general reactions, unique responses to hospital-related chaos came into play. Although The Joint Commission mandates that hospitals conduct a hazard assessment and have a disaster plan in place, these plans vary in their specificity and often have gaps when it comes to ultimately putting them into practice in an actual emergency. They might be incomplete, unfamiliar to HCWs, or rely on the presence of specific persons for implementation (French et al., 2002). This uncertainty created an additional sense of chaos.

Preparation and communication. One of the biggest challenges in hospital disaster response has been preparation and communication. Just as disasters and subsequent responses were global phenomena, HCWs worldwide reported that previous disaster drills did not fully prepare them to deliver care for which the situation called,

with examples from the United States (Lukes, 2002), Israel (Riba & Reches, 2002) and Canada (Moore, Gilbert, Saunders, Bryce, & Yassi, 2005). HCWs expressed concerns with the disaster plan, indicating that expectations had not been clearly communicated. The extent to which HCWs were involved in the initial development of their hospital's disaster response plan varied. A review of the literature indicated a disconnect between the plan and those expected to implement it. This was particularly critical among evening and night-shift personnel. Staff on these *off-shifts* felt less prepared than personnel on the day shift because education and drills were usually scheduled at times during which they could not attend (O'Boyle et al., 2006). A day shift drill did not simulate after-hours resource issues. These included concerns about access to supplies, (e.g. patient care items, medications, personal protective equipment), access to expertise (e.g. Infection Control Coordinator, Epidemiologist, Occupational Health), and the presence of hospital leadership to take command (State of California, Emergency Medical Services Authority, 2006).

Concern with reliable flow of information during an actual disaster event is a source of considerable anxiety for HCWs. Canadian healthcare workers on duty during the severe acute respiratory syndrome (SARS) outbreak in 2002 described the confusion of frequently changing directives and uncertainty that all crucial information was being disseminated to everyone. Misinformation from the media was mingled with administrative communications, resulting in confusion (Moore et al., 2005). Often changes in information, even if it was based on progressively more accurate updates, was interpreted as lacking in authority or candor. The result could lead to further destabilization and chaos (Iserson & Pesik, 2003).

Fear of being overwhelmed. When asked to describe what it would be like to work during a bioterrorism event, nurses envisioned confusion and chaos, scrambling to try and figure out what to do, and being inundated and overwhelmed (O'Boyle et al., 2006). A challenging workload was a part of everyday healthcare. Adding a surge of patients with potentially lethal, transmissible infections (whether bioterrorism or natural in origin) could very quickly overwhelm the resources and the staff of a hospital.. Further, O'Boyle and associates found nurses concerned with being able to provide safe and effective care and worried about adequate supplies and other resources, including Intensive Care Unit beds, ventilators, medications, and personal protective equipment (PPE). Stock of disposable respirators, isolation gowns and gloves are finite and would deplete quickly. Traditional Standard Precautions such as frequent disposing of PPE might not be possible yet facilities might lack a contingency plan. In addition to tangible resources, concern with the lack of access to expertise added to the fear of becoming overwhelmed. Staff nurses indicated difficulty accessing the Infection Control Practitioner (ICP) after-hours even under normal circumstances. This was a cause of concern to the nurses because they perceived the ICP as the bioterrorism content experts. However, the ICPs themselves recognized that their expertise in this regard might be overrated. A national study of 1,260 ICPs' perceptions of their level of preparation to face a bioterrorism emergency indicated that only 56% reported prior training in this area. Fewer than 10% reported confidence in the public health system's surveillance efficacy (Shadel, Rebmann, Clements, Chen, & Evens, 2003).

Ethical challenges. The prospect of using triage to allocate limited resources, personnel, and time in an emergency scenario was daunting to many HCWs. The usual

principles of the non-crisis nurse-patient relationship (e.g., candor, patient autonomy, equity, justice, and beneficence) might require a shift in application within the crisis setting. Another ethics-challenging example was being confronted with the demand for priority by a VIP, their family or their friends. Facing these dilemmas could further contribute to the sense of disorder and chaos. Larkin and Arnold (2004) emphasized that the most important component in emergency preparedness was having on hand a team of health care workers whose character and practice were virtues-driven. However, even the most ethically-conscientious team would be confronted with conflicting obligations. Medical and nursing codes of ethics failed to provide guidance on what was expected of health care workers during communicable disease outbreaks (Ruderman et al., 2006).

The American Nurses Association (ANA) Code of Ethics for Nurses emphasizes fidelity, the moral obligation to honor one's promises and commitments. As a result, the ANA code takes the position that, "The nurse's primary commitment is to the patient, whether an individual, family, group, or community" (American Nurses Association, 2001, p.9). This position supports the belief that nurses are ethically obligated to report to work in a disaster. However, this conflicts with another provision in the ANA Code which states, "The nurse owes the same duties to self as to others..." (p.18)—in other words, to protect one's own health and safety. As a result, for nurses and other health care workers, a professional commitment to the patient's well being can clash with safeguarding their own well being and the health of family and friends, whom they fear infecting.

This ethical conflict is compounded when some fail to report to work, inequitably distributing exposure risk to those who do honor their commitment to duty. During the

Toronto SARS outbreak, some hospital staff accepted permanent dismissal rather than take the risk and some decided to leave the profession all together (Ruderman et al., 2006). The midst of a catastrophe is not an opportune time to begin the work of moral and ethical deliberation. This must be proactively incorporated into disaster planning, training, policy and post-disaster debriefing (Good, 2008).

Loss of Security: The HCWs Response to Disruption during Disaster

HCWs' perception of general hospital safety. A hospital's safety climate is related to employee perceptions regarding the organization's commitment to safety. Evidence showed that if an organization was serious about adherence to safe work practices, employees were more likely to comply, resulting in fewer injuries. This in turn reinforced the perception of a safe work environment and continued the cycle (Gershon et al., 2000). Just as a recognized climate of safety produced positive results, the perception of an unsafe work environment could have a negative effect further accentuated by crisis.

Response to a biologic disaster. A potential for environmental safety disruptions exists in any type of disaster, whether caused by nature, by accident, or by terrorist. An incident involving a biological component intensifies fear for self, family and culture (Chaffee, 2006). A survey of 10,511 HCWs who had been on duty during the Singapore SARS epidemic indicated that the majority (76%) perceived a great personal risk of falling ill with SARS during the epidemic. Many experienced social stigmatization (49%) and ostracism by family members (31%), related to fear of contamination (Koh et al., 2005). Syrett and colleagues (2006) studied HCWs' attitudes regarding reporting to work response in a disaster using a survey that progressively revealed key information. With each new piece of information, researchers asked participants if they would report to

work. It was the point in the scenario when it was disclosed that the causative agent was transmissible that proved to be the major decision point for participants.

Just as the healthcare workers reacted with concern when facing a biologic disaster, so did the community. By the time the biological agent was identified, it might have spread throughout a vast area. Urban hospitals faced a dual challenge. First, they were located in areas with high population density supporting the rapid spread of infection. Second, these facilities were most likely equipped with negative-pressure rooms and other advanced care capabilities, something enticing to the ill (Smith, 2007). Even if an actual dissemination had not occurred, the population predictably would react with panic. Nurses in the O'Boyle et al. (2006) study were anxious when they anticipated a panicked public barraging their hospital: both actual victims and the *worried well*. The ability to lock down a facility successfully has been difficult at best. In addition to securing entrance into the hospital, security was necessary for the staff, particularly for those performing triage, as staff could feel threatened because of decisions not meeting people's expectations (Iserson & Pesik, 2003). Some HCWs expressed fear that they might be assaulted and have their PPE physically taken away from them (O'Boyle et al., 2006).

Personal safety needs. Another aspect of HCWs work-safety concern involved attention to personal needs, both physical and psychosocial. Disaster policies have often failed to include basic provisions for food, water, pillows, bedding, uniforms, or hygiene supplies for the staff as illustrated in the first person accounts of hospital nurses on duty when Hurricane Katrina hit (Mc Vey & Bertolosi, 2005). Other physiologic needs that nurses recognized but feared would be lacking included rest and sleep periods (French et

al., 2002). Worker fatigue was compounded by working in PPE, as exhibited during the Canadian SARS outbreak. Moore and colleagues (2005) correlated an increased fatigue and decreased productivity with using PPE but the need for increased staffing levels to account for their increased fatigue were not adequately addressed. In other studies, HCWs expressed concern regarding access to prophylaxis and/or antidotes (Gershon, Gemson, Qurehi, McCollum, 2004) and assurance of adequate protection from contamination, infection, and injury (O' Boyle et al., 2006).

Psychological safety needs. In addition to providing for the HCW's physical needs, attention to psychological and psychosocial support was important. HCWs could be faced with managing their own fears and anxieties as well as those of anxious patients and their families. Amplifying this would be concerns with the safety of the HCW's own family, loved ones and pets (Gebbie & Qureshi, 2002). These circumstances created a potential ethical dilemma where personal responsibilities vied with professional commitments and potential disciplinary consequences of failure to report for work. Once the decision to report to work was made, further psychological challenges await.

HCWs reported a lack of attention to their psychosocial needs in past domestic disaster events, (Beaton & Murphy, 2002; French et al., 2002) as well as in international disasters (Chiang & Wear, 2005; Moore et al, 2005; Riba & Reches, 2002). Nurses anticipated a similar lack of provision for psychosocial support in the event of a biologic emergency (O'Boyle et al., 2006). Desired support during the emergency included respite and privacy away from patient care areas and the ability to communicate with loved ones. The opportunity to debrief following a disaster response, or periodically in a prolonged event, was cited as beneficial for coping (Holloway et al., 1997). Anticipating a lack of

provision for these basic needs contributed to HCWs' a sense of abandonment by their organization.

Loss of Trust: HCWs' Perceptions of Institutional Support

Previous experiences. HCWs are aware of the wide range of biological, physical, chemical and ergonomic occupational hazards in their every day hospital work environment. In addition, they are aware of non-physical risks (e.g., stress related to lack of autonomy, work load, and interpersonal conflict). The hospital's administrative commitment to the overall safety climate of the facility provides the contextual backdrop to how HCWs perceive they will fare in a disaster. HCWs who have experienced a lack of administrative backup in the past are skeptical regarding future commitment. The 2002 smallpox immunization program was one example. Potential vaccine side effects were well publicized, both in the media and within the actual smallpox vaccination consent forms. When personnel asked about compensation in the event of an untoward vaccine reaction, many did not receive the reassurance of support for which they had hoped. Instead, they saw this sensitive issue tossed between the various levels of government, between divisions within their own facility and between the hospital and their workers compensation carrier, often without consensus as to who would be responsible for the protection of the HCWs well being. Finding themselves in this no-win situation, most HCWs opted out of vaccination (Wilson, 2005).

These negative impressions regarding the commitment to their best interest were echoed by HCWs who were involved in natural disaster responses. Nurses and physicians were interviewed following 1999 Hurricanes Floyd and Irene and 2005 Hurricanes Katrina and Rita. HCWs on duty during these disasters reported that often their basic

physical and psychosocial needs had been unanticipated and unmet by their hospital (French et al., 2002; Powell-Young et al., 2006). In an extreme case in New Orleans, a physician and two nurses faced criminal allegations related to actions taken during their experience at the height of Hurricane Katrina. In an interview on the CBS television show *60 Minutes*, one of those charged, Dr. Anna Pou, described the following scene: “I don’t think I could have done anything more. I worked around the clock running up and down stairs. I did the best I could under these dreadful conditions that I did not create, but were created by the fact that we were abandoned” (Fager, 2006).

Reputation for honesty. Just as a hospital’s reputation for their safety climate must be established over time, a facility’s reputation for honesty and transparency must also be based on its track record. If a hospital’s leadership team had been known for communicating in an open and straight forward manner, staff were likely to trust that this would continue, even in a disaster. Conversely, if a hospital’s administration traditionally used blame and cover-up when sentinel events arose, they might be distrusted and perceived as more likely to resort to a lack of candor or even *disinformation* in a disaster event. As a result, at a time when communication was crucial, HCWs might have a cynical reaction, reinforcing loss of trust in the institution’s commitment to their well being. Even the most transparent, trusted administration faces communication challenges in a disaster event. As the disaster unfolds, adjustments and updates to the response plan will become necessary. Sometimes these changes may be drastic departures from the traditional practice model with which the HCWs are comfortable, such as cohorting patients in the absence of individual negative pressure isolation rooms or reusing PPE in

the event of supply shortages. How the organization conveys updates during a disaster will reinforce a pre-existing sense of trust or mistrust.

Visibility of leadership. HCWs anticipated that in the event of a bioterrorism disaster, they would be functioning in a chaotic environment without the presence of hospital administration or a clear chain of command (O'Boyle et al., 2006). HCWs who actually experienced the chaos of disaster response reinforced the need for the visible, reassuring presence of leadership. French and colleagues (2002) interviewed nurses following 1999 Hurricane Floyd. These nurses' statements gave insight into the important interaction between management and direct care providers:

They need to make regular rounds and know what is going on... Management should dress casually, not in pretty clothes, and come prepared to render hands-on patient care. If management expects employees to come to work then they should be here also... The nurse manager needs to control the flow of the emergency department in a calm manner. Employees take the cue from the manager and instability creates more instability so providing calm direction to staff is very important to maintain morale and cooperation within the department. (French et al., 2002, p.115)

Similar sentiments were expressed when healthcare workers were asked about priorities during the 2003 Canadian SARS outbreak:

I think...more involvement with the president of the hospital. I think that when that person is speaking to you and addressing this issue, you feel like you are in the loop. When you are getting all this second-hand information from everywhere, you wonder what they are hiding. (Moore et al, 2005, p. 262)

The traditional Hospital Incident Command System (HICS) plan gathers the leadership team in a command center to direct operations. While this is a well respected model, HCWs observations emphasize the importance of administrators rotating out of the command center and into the patient care areas on a regular basis to demonstrate their support to those providing the front-line care.

Loss of Freedom of Choice: HCWs' Response to Being Confined to the Workplace and the Decision to Report to Work

Choice to report to work. Kruus and associates (2007) surveyed HCWs from five urban hospitals who viewed videos and written presentations of three hypothetical scenarios: a public riot, an infectious disease outbreak and a regional power outage. This study revealed that HCWs willingness to work during disasters would be influenced by their perceived safety, both in traveling to work as well as in the workplace. Other factors identified as influencing their decision to report to work included confidence in available PPE, perceived risk of contracting illness, family supportiveness, and concerns with being able to effectively do their job. Irvin and colleagues (2007) surveyed 178 hospital personnel, including physicians, nurses, and administrative staff to determine their willingness to report to work in the hypothetical event of avian influenza pandemic. They found that only one-half of the HCWs indicated that they would report to work as usual, while 42% said they might report to work, and 8% said that they would not. The most significant deciding factor for those who were unsure was confidence in the hospital's ability to protect them. Financial incentives did not appear to influence the staff's decisions, even if offered triple pay. Besides an unwillingness to report for duty, an inability logistically to get to work may exist in a disaster event (Qureshi, et al., 2005).

Consequently, the nurses in the study by O'Boyle et al., (2006) believed that resulting staff shortages would place even greater pressure on those remaining.

Choice to leave work. Regardless of how stressful a work shift has been, the HCW can look forward to the rejuvenation of going home. Realizing the potential for the loss of freedom to leave the hospital during a disaster was disconcerting. While this aspect has not been studied in an actual biologic disaster, O'Boyle and colleagues (2006) conducted research on nurses' *anticipated* response to a hypothetical biologic disaster scenario. Specific loss-of-freedom concerns identified in their study included being required to stay on duty due to lack of replacement staff. The focus group nurses anticipated that many co-workers would fail to report to work or even quit their jobs, rather than placing themselves in harm's way.

Choice of priorities. Another aspect in loss of freedom centered on the concerns for being free to attend to family safety. Qureshi and colleagues (2005) found this to be the most frequently cited reason for hospital employees being unwilling to report for duty in a disaster. In addition, HCWs expressed anxiety over inadvertently endangering their family by *bringing something home* that might contaminate or infect their loved ones. The possibility exists that, due to an actual exposure, quarantine may be imposed, preventing them from returning home, further compounding their concern.

Reviewing the lived experiences of HCWs across a broad spectrum of actual disaster events in many cases validated the reality of concern for loss of freedom. Nurses' experiences during Florida's 1999 Hurricane Floyd were studied and concern for family's safety was identified as primary (French et al., 2002). These findings were echoed by research on the 2002 Canadian SARS outbreak (Moore et al., 2005) and

reiterated by studies on Israeli nurses caring for explosion victims (Riba & Reches, 2002). Despite this clash between personal freedom and professional responsibilities, many HCWs did step forward and report to duty.

Biologic Disaster: Pandemic Influenza

The preceding discussion of HCW response to loss in disaster illustrated a universal fear of abandonment, cutting across differences in setting, duration, and cause. These findings validated the importance of research designed to delve further into this concept. To do so, the tool in development required a specific scenario to which participants can respond. Pandemic influenza was chosen as a type of biologic disaster upon which this instrument's items were based. Pandemic influenza is a good choice for a number of different reasons, including the likelihood that it may become a reality (U.S. Department of Health & Human Services, 2006 a, 2006 b). As a scenario, it represents a *worst-case* aspect likely to elicit strong responses by participants, useful in clearly identifying significant factors. Another advantage to building the tool around a pandemic influenza scenario is the opportunity to gain insight into the largely unstudied influence of the sustained-over-time component of disaster response. Therefore, a review of the literature on pandemic influenza was conducted. This review informed the creation of a factual introduction scenario for the instrument. The pandemic influenza literature also provided background information useful in questionnaire item generation and will play a role in the interpretation of findings.

The Influenza Challenge

Influenza viruses challenge healthcare each year with their resilience and adaptability. While effective vaccines have been developed to prevent many other viral

illnesses, the influenza virus' ability to alter its genetic makeup has proven more adept than science's ability to forecast the next season's strain. As a result, despite annual vaccination efforts, the U.S. faces an annual burden of approximately 36,000 flu-related deaths and more than 200,000 flu-related hospitalizations each year (U.S. Department of Health & Human Services, 2006 c).

The Pandemic Influenza Threat

A pandemic or worldwide outbreak of a new influenza virus happens when a novel influenza virus emerges that infects and can be effectively transmitted between humans. Animals, especially birds, are the most likely reservoirs for these viruses. In the last three influenza pandemics, avian (bird) virus played a role and two of these pandemic-causing viruses remain in circulation and account for the majority of seasonal influenza.

Pandemics occur periodically, killing millions worldwide. The pandemic of 1918 had a worldwide death toll of approximately 40 million with 675,000 in the United States. The 1957 pandemic claimed approximately 2 million worldwide with 70,000 deaths in the United States. The 1968 pandemic killed approximately 1 million people with 34,000 deaths in the United States (U.S. Department of Health & Human Services, 2006c; WHO, 2005). History and science predict that we are likely to experience at least one pandemic in this century (U.S. Department of Health & Human Services, 2006b).

The current pandemic threat is linked with the H5N1 strain of Influenza A virus, the cause of avian influenza, or "Bird Flu." Despite attempted control measures, this virus is now endemic in Southeast Asia, present in long-range migratory birds, and unlikely to be eradicated soon (U.S. Department of Health & Human Services, 2006b). Although

H5N1 has not yet shown to transmit efficiently between humans, there is concern that this could change through genetic mutation or exchange of genetic material with a human influenza virus. Even if this does not occur with H5N1, history suggests that a different influenza virus will emerge and result in the next pandemic.

The Effect of a Pandemic

All large scale, multi-casualty disasters overwhelm resources for a period of time. What makes a pandemic unique is the sustained nature of this type of disaster. Typically, the pandemic comes in waves, each lasting months, for as long as a year. As essential personnel are removed from the workforce (either through illness or quarantine), critical infrastructure is threatened. Globally, entire communities would be effected, not only from the illness and death associated with the influenza, but from attempts to avoid its spread, including travel bans, closing of school and childcare facilities, and cancellation of public gatherings. A disruption to commerce and the movement of goods and services is likely. Unemployment due to public and private business closures is anticipated. The HCW may find themselves as sole family breadwinner, further complicating the report-to-work decision.

The Effect of a Pandemic on Healthcare

In 2006, the U.S. Homeland Security Council released the *National Strategy for Pandemic Influenza—Implementation Plan* (U.S. Department of Health & Human Services, 2006b). This document detailed the roles of federal and state governments, public health agencies, physicians, hospitals, businesses, and citizens in a pandemic disaster. Disaster planning experts, when asked for reaction to this plan, generally found the plan sensible and appreciated the delineation of responsibilities. However, they

expressed concern with implementation details, especially at the local hospital level (Mitka, 2006).

Summary

A review of the literature on HCW reaction to working during a biologic disaster revealed fears and concerns. This apprehension was a result of anticipated loss, identified as fear of abandonment by O'Boyle and associates (2006). For the purpose of this study, these losses were categorized as loss of order, loss of security, loss of trust, and loss of freedom. In addition to the loss-theme constructs, other factors were identified which may influence the decision to report to work during a biologic disaster. These include the HCW's sense of loyalty or sense of duty, some possibly imbedded in the loss-theme factors and some perhaps independent. Certain respondent characteristics may also play a role in the report-to-work decision. Information gathered in the literature review will inform the development of the PREP Tool scenario and survey items to be discussed in Chapter 3 and the analysis that will follow.

CHAPTER 3

Methodology

This chapter discusses the development of the Provider Response to Emergency Pandemic (PREP) Tool, an instrument designed to determine if health care workers' fears and concerns are a predictor of their willingness to report to work during a sustained biologic emergency. The steps involved in this instrument's development and refinement were initial development, pre-testing with a focus group, and a pilot study using the instrument with a group of hospital health care workers. A discussion of the methodologies used to complete these phases will be presented in this chapter. A presentation of the results of the pilot study data and the subsequent development of the final version of the PREP Tool follows in Chapter 4.

Development of the PREP Tool

A search of the literature revealed that the few existing questionnaires used in previous studies would not meet the goals of this research project for several reasons. First, while they yielded some useful insights, they were not designed in such a way to allow for the quantitative analysis needed to fully inform future disaster planning. A second component not addressed in earlier work was the sustained disaster event. A third gap that necessitated the development of a new instrument was the need to more fully explore key issues identified in previous disaster-related qualitative research and in post-disaster event reviews. This study categorized these issues into four themes of disaster-

related feared loss: loss of order, loss of security, loss of trust, and loss of freedom. A new instrument was designed to quantitatively explore the relationship between HCW's fears and concerns and their willingness to report to work in a sustained disaster event.

Item Generation and Development

The literature review of health care worker's fear of loss and abandonment in disasters formed the major content themes for items developed for this survey tool. Upon the recommendation of the experts of the instrument development team, a series of items to evaluate the role of loyalty and sense of duty was also included in the tool. In addition, communication with the principle investigators on several related studies yielded useful suggestions on improving the reliability and validity in a new instrument (Irvin, 2007; Kruus, 2007). Ultimately, 5-8 items were written for each major content theme, for a total of 31 corresponding items to ensure adequate coverage of content (Appendix A).

Instrument development team. An expert panel was convened to assist in the development of this tool. The participants were chosen for their expertise in disaster preparedness, health care delivery, employee relations, workplace law, and research study design and analysis. The principle investigator provided representation in the area of occupational health.

At the initial survey development team meeting an overview of the proposed project was presented, including present and future goals and concepts from the literature related to HCW's perceptions about disaster preparedness and their willingness to work during disasters. The development team met for a total of 5 times. During the meetings themes and specific questions were discussed and refined. The principle investigator took notes on these discussions and after the meeting summarized them as meeting minutes,

which were distributed electronically to the team members. In addition to the minutes, recommended revisions to the survey were made and brought to the next meeting for further consideration. A final draft of the survey instrument was approved by the development team.

Introductory scenario. In order to elicit responses focused on a sustained biologic disaster, an introductory scenario was needed and pandemic influenza was chosen for this purpose. The goal of the instrument development team was to create a factual introductory scenario concise enough for practicality, yet evocative enough to put the participant *into the scene*. It is from this personally-effected vantage point that responses were desired. Details on the impact of worldwide pandemic were factual, based on literature review and confirmed by content experts on the instrument development team. A bullet point format was chosen as the style to depict the scenario, as it balanced the desired brevity with providing many key facts. These facts were organized by impact to the county as a whole and then to the impact to the respondent's own hospital workplace. With these facts in mind, the participants were asked to complete the instrument based on how they believed the pandemic would impact their own life. The introductory scenario followed the introductory letter on page 2 of the PREP Tool survey packet (Appendix B).

Theme-based items. Survey items were developed based on the four themes identified from the literature: Loss of Order, Loss of Security, Loss of Trust, and Loss of Freedom. For example, fears identified as contributing to Loss of Order included a lack of knowledge and concerns with being overwhelmed. Therefore, items were developed to reflect these concerns, such as, *The hospital has a plan and all needed supplies in place to manage a large increase in the number of patients*, and *I will be faced with the*

challenge of compromising the quality of work I will be able to perform. In addition to the questions based on the *Loss*-themes, a series of exploratory items to evaluate the role of loyalty and sense of duty was included in the tool. The final survey items were depicted in the second through fifth pages of the PREP Tool survey packet (Appendix B).

Demographic questions. In addition to the concept-related items, questions were developed to examine respondent characteristics. These questions included job title, work department, shift worked, pay status (hourly or exempt), number of years in their profession, number of years at their hospital, gender, generational group, presence of minor children in the home, presence of adult dependant(s) in the home, and presence of pets in the home, and space for additional comments, found on the final page of the PREP Tool survey packet (Appendix B).

Scaling Format and Rationale

Instrument items were developed to represent the opinion, attitude or belief of each concept under study. Participants were asked to indicate their varying degree of agreement or disagreement with each declarative statement using a four point Likert-type scale that included options *Strongly Agree*, *Agree*, *Disagree*, and *Strongly Disagree*. A *forced-choice* format was chosen, without a neutral choice (i.e. *Neither Agree or Disagree*). The rationale for this was an effort to eliminate some of the respondent bias identified as potential distortions to the Likert scale. Respondents may avoid using extreme response categories (central tendency bias); agree with statements as presented (acquiescence response bias); or may try to portray themselves or their group in a more favorable light (social desirability bias). It was recommended that statement items be worded fairly (though not extremely) strong when using a Likert format, as mild

statements may elicit too much agreement and overly extreme statements, too much disagreement. It is preferable to allow the moderation of opinion to be expressed in the choice of response option (DeVellis, 2003).

Instrument Evaluation

This section will provide a review and discussion of methods used to evaluate the new instrument. Validity and reliability estimations will be presented and a discussion of the evaluations completed prior to piloting are included. The quality sought in each item of the instrument was a high correlation with the true score of the latent variables.

Validity estimation. The purpose of establishing validity is to ensure that the instrument is measuring what it was intended to measure. Also of issue with validity is whether the variable is the underlying cause of item co-variation (DeVellis, 2003). Creswell (2003) warned of potential threats to validity and this section will address measures to minimize these shortcomings. Threats to construct validity can occur when investigators use inadequate or unreliable items in the tool. It was anticipated that the use of a multidisciplinary team of experts to develop the instrument questions would maximize the chance of each question reflecting the desired concept. Questions were refined further based upon feedback from a focus group pre-test of the instrument. Threats to statistical conclusion validity can occur as a result of inadequate statistical power or the violation of statistical assumptions. Usefulness of factor analysis depends on relationships among the original variables. If estimated from a small sample, correlation coefficients have a tendency to be less reliable. If factor analysis is done on unreliable correlations between the variables, findings will be flawed. Tabachnick and Fidell offered guidelines to address this concern, recommending that a data set include at least 300

cases for *Good* reliability, at least 500 cases for *Very Good* reliability, and 1000 cases for *Excellent* reliability (Mertler & Vannatta, 2005). Therefore, this study will follow these guidelines with a minimum 300 case data set.

Reliability evaluation. Reliability measurement refers to the degree of consistency and repeatability of the instrument. The goal for this new instrument was that it would yield scores that were stable and would not fluctuate and could be repeated with similar results. This internal consistency was measured using Cronbach's coefficient alpha on the pilot data. Nunnally and Bernstein (1994) propose that an alpha coefficient of 0.70 is acceptable for an instrument in early stages of development.

Focus group pretest evaluation. Content validity was evaluated prior to piloting the instrument using focus group interviews, chosen for several properties not inherent to one-on-one interviews. The focus group format had the advantage of allowing participants more time to reflect and recall before answering. This format also included opportunity for modification or amplification of earlier responses as the interchange between participants took place (Lofland, Snow, Anderson, & Lofland, 2006).

Focus group participants were a convenience sample of health care providers invited to participate. They were selected by the researcher as representative of the overall hospital population, taking into consideration demographics as well as job classifications. Potential participants were contacted and asked if they would be willing to participate in the evaluation of a new survey being developed to assess disaster preparedness. To ensure protection of focus group participants, the same process was followed with these individuals and their data as was followed in the actual pilot study, detailed in the next section.

On the appointed date and time, the focus group met. The researcher welcomed the participants and thanked them for their participation in this project. Introductions were made and refreshments served. The researcher explained the purpose of the focus group, using a Focus Group Participant Information and Consent Form (Appendix C). All who indicate a continued willingness to proceed were asked to complete the PREP Tool survey. Upon completion, the researcher used the PREP Tool Interview Guide (Appendix D) to elicit feedback on the instrument.

During the discussion, the researcher listened attentively and took field notes on all responses. Immediately following the focus group session, field notes were expanded to capture full responses. In addition to the written record of participant comments, the researcher made analytic notes. Critique of the focus group process itself was recorded as methodological notes. Reflexive comments were recorded as personal in-process notes. The focus group interviews identified strengths and weaknesses of the proposed survey instrument and administration process and this feedback was used to refine the instrument for the final pilot draft. Focus group findings were summarized in Appendix E.

Pilot Administration of the PREP Tool

A pilot study was conducted to establish the validity and reliability of this new instrument. Subjects were selected from a cross section of hospital employees. They were given a pandemic flu scenario and asked to give their reaction to 31 related questions and to provide demographic data. Responses were analyzed and used to develop the version of the PREP Tool.

Setting

The pilot study was conducted in a medium sized acute care hospital in an urban city in the southwestern United States. This hospital was one of five which comprised a major health care system in its region. The pilot hospital was a level I trauma center and would be called upon to play a major patient care role in the event of an actual pandemic flu emergency.

Population and Sample

The pilot study population was the approximately 2,500 employees of the aforementioned hospital. This population was comprised of clinical, support, and administrative health care workers and believed to be representative of a typical, midsized urban hospital in terms of job titles, work shifts, gender, age, and child/elder care responsibilities. Sampling was conducted throughout the hospital to include a wide variety of healthcare workers and to achieve a minimum return of 300 questionnaires.

Protection of Participants/Human Subjects

Minimizing participant risk. To ensure protection of study participants, the research proposal was approved by both the university (Appendix F) and hospital (Appendix G) Investigational Review Boards (IRB). The researcher involved in this study completed an approved Human Participants Education for Research Teams course and provided a certificate of completion (Appendix H). The proposed descriptive study was anticipated to have minimal potential risk to the participants. The hospital staff (and consequently, the study sample) did not include vulnerable populations, such as persons with diminished mental capacity or prisoners. A certain portion of the hospital staff members did fall into traditionally higher participant risk categories such as minors under

the age of 18, pregnant women, and HIV/AIDS-positive individuals. However, the design and nature of this study did not subject them to greater risk than the overall group.

The study design and data collection process endeavored to eliminate potential participant confidentiality risks. One risk was negative repercussion related to an individual's responses on the questionnaire. This was addressed by the absence of identifiers, such as name or corporate identification number on the survey form. All data was reported in aggregate and by broad categories, such as *In-Patient Care Department* rather than *4 West, Orthopedics* and *Patient Care Technician* rather than *Radiology Technician*. Smaller departments with less than 10 employees had their responses grouped and reported with other similar departments to eliminate the possibility of connecting specific responses with specific individuals.

A second risk could have been the sense of being coerced into participation due to having the survey conducted with the entire staff, in a group, during work time. This was addressed by giving the employees the option of turning in their survey blank. This allowed them to follow the same steps as their co-workers (receiving the survey and turning it in) without singling them out with a different process.

Acknowledging these risk concerns and detailing the steps which were to be taken to eliminate them was included in the introductory remarks and in the introduction letter attached to the survey. The introduction specified that participation was voluntary and that declining to participate would not be communicated to their manager or have any negative repercussions to them. The introduction included a statement regarding the use of findings in the principle investigator's doctoral dissertation research.

Potential benefits to participants were included in the introduction. Benefits included the opportunity to have their perspective and opinions influence future disaster preparation, contributing to both patient and staff safety and well being.

Confidentiality of the data. Confidentiality of the data was maintained by storing hard copy data in a locked file cabinet and electronic data in password-protected hospital computer in the principle investigator's office. Individual participant identifiers were removed prior to exporting any data from these to secured locations. Data will be stored for a minimum of 3 years following the completion of the study.

Data access was limited to the principle investigator and their doctoral dissertation committee. Reports and manuscripts were prepared in such a way so as to preserve anonymity of the participants and the participating institutions. Findings were and will be submitted in various formats, including the principle investigator's doctoral dissertation, an executive summary to the hospital leadership, and professional presentations and publications.

Data Collection

Corporate and hospital senior leadership were contacted, briefed on the research proposal and asked for their permission to conduct this study. A letter was sent via e-mail to the department managers of each hospital department, describing the study, plans for future planning based on findings and requested permission to have access to their staff. Managers were asked for approximately 15 minutes of agenda time at their department staff meeting. The researcher attended individual departmental staff meetings of selected departments of the hospital to achieve the desired cross-section of the entire hospital population in a single-stage sample.

Data was collected using a survey instrument designed for this study. A brief, standardized introduction was given verbally and in writing at the beginning of each data collection meeting, depicted as the first page of the PREP Tool survey packet (Appendix B). The IRB-approved introduction included the right to participate voluntarily and the right to withdraw at any time without penalty or effect to job status. The introduction emphasized that all surveys would be de-identified to provide anonymity. The purpose of the study was explained, including its likely impact and benefit to them. Participants were told of their right to ask questions, obtain a copy of results, and have their privacy respected. Staff was asked to complete the questionnaire at that time and return it to an envelope to be taken by the researcher at the end of the allotted time. Those who wished to decline participation were asked to return their blank questionnaire to the envelope.

Hardcopy (versus electronic) survey was chosen for several reasons. It was felt that a larger return could be achieved by the convenience of on-the-spot completion and that this would allow simultaneous completion by a large number of participants. It made it possible to include personnel with limited computer skills and workers in departments with limited computer access. One disadvantage of this data collection method was the increased time required of the researcher to attend meetings and to administer, collect and manually tabulate the surveys. A second disadvantage was that survey time intruded on other staff meeting agenda time. A third disadvantage was potential concern by staff regarding negative repercussions over their answers and possible reluctance to complete a questionnaire in the presence of their co-workers, manager and/or the researcher.

Data Analysis of the PREP Tool Pilot Study

Phase 1: Descriptive Analysis of Participation

Analysis started with a report of participation, including number of participants compared with total number of study-hospital employees. This was followed by detail on frequency and percentage of departments and job categories represented. A description of participants was presented, including frequency and percentage of gender, work shift, and hourly vs. salaried/exempt status. Home responsibilities, including minor children in the home, adult dependents in the home, and pets in the home were described in terms of frequency and percentage. Participants' years in their profession and years at the hospital were assessed and reported by range and mean. Participants' age was assessed, reported by frequency and percentage of generational designations.

Phase 2: Psychometric Analysis of PREP Tool Survey Items

Descriptive analysis. Items related to perception were formatted using a Likert scale of 1(*Strongly Agree*) to 4 (*Strongly Disagree*), allowing comparison using nonparametric analysis of this ordinal data. Data were coded and analyzed using the Statistical Package for the Social Sciences (SPSS) program, version 12.0. The data set was cleaned of any wild codes (Polit & Beck, 2008). Missing data in the demographic section were excluded from statistical analysis. Missing data from the PREP Tool survey were coded using mean imputation, in which the mean value of the missing item was calculated and then used in used for that item's analysis (Polit & Beck, 2008). The mean, percentage, and range of scores were reported for all variables. A *P* value = .05 was used to determine statistical significance.

Reliability assessment. The reliability of the survey instrument was evaluated for internal consistency using the Cronbach alpha statistic using the SPSS reliability procedure. Cronbach's coefficient alpha was used in three applications. First, individual items were assessed within their subscale, evaluating how reliable a particular item was at measuring the subscale's intended *Loss*-concept. This was done by comparing the mean score of the individual item with the mean score of the subscale. Second, individual items were evaluated for reliability related to the mean total score. Third, the subscales were assessed to determine reliability of each mean subscale score related to the mean total score.

Correlations. Items were evaluated for correlation between variables (concept items as well as demographic questions) using two methodologies. First, the Pearson Product Coefficient (r) was used for continuous data, with a result of .30 to .70 to indicate correlation. Analysis included inter-scale correlations and correlation between respondent characteristics and subscale scores. The second correlation assessment examined the relationship between how an individual answered each item and how they responded to item 26, *I will report to work as usual*, referred to as the *Report to Work (RTW)* item. Responses to the RTW item were re-coded to *yes* and *no* responses, with *Strongly Agree* and *Agree* coded as *Yes-RTW* and *Disagree* and *Strongly Disagree* coded as *No-RTW*. Spearman's rho (ρ) correlations among the ranked PREP Tool survey items were explored using only those surveys where participants indicated that they would RTW. The level of significant correlation between survey items and the RTW response was taken into consideration in final survey item selection.

Comparison of Yes-RTW and No-RTW groups. A Mann-Whitney U was used to compare how the Yes-RTW group and the No-RTW group responded to individual survey items. This analysis indicated which survey items discriminated between the 2 groups, expressed as an assumptive significance. In addition to analysis of Yes-RTW and No-RTW group responses to individual survey items, differences between *Loss*-subscale scores were examined using the t -test.

Respondent characteristics. To explore the role of respondent characteristics in the RTW decision, a t -test was done on the 11 demographic survey items that comprised the final section of the PREP Tool survey. Characteristics of the Yes-RTW group and No-RTW group were compared, identifying significant demographic differences, reported as standardized residual and chi square for each.

Phase 3: Exploratory Factor Analysis of PREP Tool Instrument

Factor analysis is a useful analytic tool used to assess important properties of a new instrument. It allowed an empiric determination of how many latent variables were underlying the set of PREP Tool items. Factor analysis was then used to condense this information so that variation could be accounted for by using a smaller number of variables (e.g., questionnaire items), a desirable characteristic in a survey instrument. An additional feature of factor analysis is its usefulness in defining the substantive content or meaning of factors that account for the variation among a larger set of items. This study concentrated on the first phases of factor analysis, exploratory factor analysis, which will provide the foundation for the confirmatory factor analysis to be performed on future administrations of the finalized instrument. Clustering inter-correlated variables, capitalized on shared variability, allowing exploration of the most variance, or related

properties, with the smallest number of factors. Nunnally and Bernstein (1994) expressed their belief that factor analysis was best used to confirm thoughtfully constructed factors, as was the case in this study, rather than for *blind inquiry*. Principle component analysis was chosen for this study's method of factor analysis because of principle component analysis's ability to condense the data while optimizing the exploration of each component's variance.

Factor extraction. Due to the exploratory nature of principle component analysis, the researcher must decide how many components to retain for interpretation. Kaiser was credited with developing a guideline that specified the retention of only those components with an eigenvalue greater than one. Mertler and Vannatta (2005) defined an eigenvalue as "the amount of total variance explained by each factor, with the total amount of variability in the analysis equal to the number of original variables in the analysis (i.e., each variable contributes one unit of variability to the total amount due to the fact that the variance has been standardized)" (p. 250). Eigenvalues were calculated by the SPSS factor analysis program and used as the basis of factor extraction and rotation using the normalized varimax method.

The scree test is a non-statistical method of factor extraction is based on eigenvalues using their relative value rather than absolute values as a criterion. Each factor is extracted from a matrix and, as a result, the amount of information in each successive factor is less than its predecessors. When plotted, the progression of factors will have a point at which information drops off noticeably, typically around the eigenvalue of 1.0. The scree test was used in selecting the number of meaningful factors represented by the data.

Factor rotation. Once the condensing phase of exploratory factor analysis was completed, a second stage was undertaken: factor rotation using the normalized varimax method. Nunnally and Bernstein (1994) described three advantages afforded by properly rotating initial factors. First, rotation reveals the relation between variables. Second, rotation can concentrate into a single factor the variable shared by two highly correlated variables. Third, rotation will tend to level the variance of factors.

Logistic regression. In order to identify what indicators were most predictive of in the RTW decision, logistic regression was applied to all individual items, original subscales, and factor analysis theme subscales. To identify the PREP Tool survey items most predictive of the RTW decision, a comparison was made between the logistic regression of both the most individually predictive items and the logistic regression of the six factor analysis theme subscales. Findings were taken into consideration in the decision on which items to retain or eliminate in the final version of the PREP Tool.

Summary

This chapter detailed the methodology used to develop the PREP Tool. The steps involved were the initial development of the instrument, pre-testing it with a focus group, and conducting the pilot administration. The final step was data analysis, conducted in 3 phases: Analysis of participation, psychometric analysis of survey items, and exploratory factor analysis. Results from these analyses are presented in Chapter 4.

CHAPTER 4

Results

The purpose of this chapter was to present the results of the PREP Tool pilot study as they relate to the two aims of this study. The format of this instrument allowed quantitative analysis of issues previously identified using qualitative methods. Adding this component achieved Aim 1 of this study and contributed to the body of knowledge in the field of disaster preparedness research. Discussion of Aim 2, the development of the final version of the PREP Tool, will continue in this chapter with a presentation of the psychometric evaluation results of the pilot study.

Phase 1: Descriptive Analysis of Participation

Overview

Following IRB approval, individuals were invited to participate. The PREP Tool was administered to 452 participants, 18% of all employees in the study hospital, based on Human Resources data from the close of fiscal year 2008. Data collection took place during 33 staff meetings over the course of 3 months. Each staff meeting yielded between 4 and 39 completed surveys. While given the option of declining participation by returning the tool blank, no participants chose this option though there were surveys returned with some unanswered items. Table 2 summarizes the demographic profile of participation.

Table 2

Demographic Profile of PREP Tool Pilot Participation

	Demographic	Frequency	Percent
Department			
	In-Patient Care Departments	104	23.1
	In-Patient Ancillary Service Departments	113	25.1
	Out-Patient Departments	75	16.6
	Administrative Service Departments	58	12.9
	Support Service Departments	101	22.4
Job Category			
	Patient Care Professionals—Nurses	124	27.9
	Patient Care Professionals—Non-Nurses	69	15.5
	Patient Care Technicians	92	20.7
	Administrative Service Workers	105	23.6
	Support Service Workers	55	12.4
Gender			
	Females	312	73.2
	Males	113	26.5
Work Shift			
	Day Shift	362	82.8
	Night Shift	47	10.8
	PM Shift	22	5.0
	Multiple Shifts	6	1.3
Minor child/children in the home			
	No	260	61.6
	Yes	162	38.4
Adult dependant(s) in the home			
	No	299	71.2
	Yes	121	28.8
Pet(s) in the home			
	No	206	48.0
	Yes	222	51.9

Departments Represented

Twenty-four different departments participated and were grouped into five sectors for analysis and reporting purposes. These sectors were In-patient Care Departments, In-patient Ancillary Service Departments, Out-patient Departments, Administrative Departments, and Support Service Departments.

Job Categories Represented

The PREP Tool was completed by HCWs representing 33 different job titles. These job titles were grouped into five designations: Patient Care Professionals—Nurses, Patient Care Professionals—Non-nurses, Patient Care Technicians, Administrative Service Workers, and Support Service Workers.

Description of Participants

Gender. Women comprised the majority of the participants. This approximate 3:1 ratio was consistent with the hospital's gender mix of 76.5% ($n = 1,914$) women and 23.5% ($n = 589$) men.

Work shift. The majority of participants reported working day shift, followed by night shift, PM shift, and those reporting multiple shifts. Hospital personnel records indicated that, overall, shifts were distributed day shift ($n = 1,740$; 69.5%), night shift ($n = 582$; 23.3%), and PM shift ($n = 181$; 7.2%). Though some employees work multiple shifts, each employee was assigned to one of these three shifts; therefore, there was no Human Resources multiple shifts category.

Hourly vs. salaried/exempt status. Most participants reported being paid by the hour ($n = 381$; 87.2%) and the remainder were salaried/exempt ($n = 56$; 12.8 %). Hospital

personnel records indicated that the majority of employees were paid by the hour ($n = 2,309$; 92%) with the remainder salaried/exempt ($n = 194$; 7.8%).

Home responsibilities. Three questions assessed home responsibilities. The first question asked, *do you have a minor child/children in your home?* This question included a blank after the *Yes* response for the participant to list the age(s) of the child/children. Of those who answered yes, the age of the children ranged from newborn to age 24. The second home responsibility question asked, *do you have **adult** dependent(s) in your home?* This question included a blank after the *Yes* response for the participant to list the relationship(s) of the adult dependant. Of those who answered *Yes*, the relationship was requested and responses summarized in Table 3.

Table 3

Relationship of Adult Dependents in the Home ($n = 162$)

Relationship	Frequency	Percent
Spouse	55	53.9
Parent	18	17.6
Adult Child	18	17.6
Grandparent	2	2.0
Sibling	1	1.0
Parent and Sibling	1	1.0
Unspecified Other	7	6.9

A third home responsibility question asked, *do you have a pet in your home?* This question included a blank after the *Yes* response for the participant to list number and type of pets and responses, summarized in Table 4.

Table 4

Types of Pets in the Home (n = 176)

Type of Pet	Frequency	Percent
Dog	79	44.9
Cat	40	22.7
Multiple Pets	26	14.8
Cat and Dog	23	13.1
Fish	4	2.3
Bird	3	1.7
Rabbit	1	0.6

Years in the profession and years at the hospital. Participants were asked, *how many years have you worked in your profession?* Responses ($n = 418$) ranged from less than 1 year to 44 years ($M = 12.6$ years). Participants were asked, *how many years have you worked at [study hospital]?* Responses ($n = 414$) ranged from less than 1 year to 37 years ($M = 8.3$ years).

Age of participants. Study participants were asked to identify their age from the following choices: Under 18, 18-31, 32-43, 44-62, 63-75, and Over 75. These age ranges correspond to the generational designations commonly found in popular literature: Under age 18 (minor age Generation Y), age 18-31 (Generation Y), age 32-43 (Generation X),

age 44-62 (Baby Boomer Generation), age 63-75 (Silent Generation), and 76-84 years of age (older Silent Generation) (Strauss & Howe, 1992). Ages of participants were summarized in Table 5.

Table 5

Age of Participants (n = 421)

Age Range	Frequency	Percent
Under 18	2	0.5
18-31 years	121	28.7
32-43 years	112	26.6
44-62 years	176	41.8
63-75 years	9	2.1
Over 75 years	1	0.2

Phase 2: Psychometric Analysis of PREP Tool Survey Items

Descriptive Analysis

The PREP Tool items 1-31 were formatted using a Likert scale from 1 (Strongly Agree) to 4 (Strongly Disagree), allowing for group comparison for the questions using nonparametric analysis. Table 6 illustrates the frequency distribution of responses and mean response score for each PREP Tool item. While mean values are not normally used to describe ordinal data, it does give the reader a sense of the strength and orientation for the various responses.

Reliability Assessment

Calculation of the Cronbach's coefficient alpha on each of the PREP Tool subscales provided an analysis of internal consistency reliability. A coefficient alpha above .70 is desirable for new instruments (Nunnally & Bernstein, 1994). Items failing to achieve this .70 benchmark for the coefficient alpha in each subscale included four Loss of Security items (12, 13, 14, 15), five Loss of Freedom items (21, 22, 23, 24, 25) and one Sense of Duty item (27). It is noted that the three reverse-scored items (5, 12, 21) were among those that failed to achieve a .70 alpha. Results are depicted in Table 6.

Table 6

Response Frequency and Cronbach's Coefficient Alpha on PREP Tool Items (n = 452)

Sub-scale	Item	Strongly Agree	Agree	Disagree	Strongly Disagree	Mean	Coefficient Alpha
Order $\alpha=.849^*$	1	40	197	182	29	2.45	.709
	2	67	281	84	17	2.11	.737
	3	73	277	85	15	2.09	.795
	4	48	235	129	15	2.26	.747
	5	55	246	124	14	2.27	.266
	6	67	284	82	9	2.08	.756
	7	65	331	38	6	1.97	.729
Security $\alpha=.868^*$	8	103	306	35	2	1.86	.769
	9	83	262	75	8	2.02	.737
	10	67	263	100	9	2.12	.741
	11	81	297	69	5	1.99	.771
	12	71	212	127	31	2.27	.301
	13	31	263	130	15	2.29	.586
	14	109	293	35	2	1.84	.621
	15	33	188	177	39	2.51	.503
Trust $\alpha=.850^*$	16	197	230	14	2	1.60	.788
	17	123	296	21	2	1.82	.872
	18	99	298	46	2	1.89	.873
	19	76	286	73	5	2.02	.842
	20	110	294	35	4	1.85	.853
Freedom $\alpha=.812^*$	21	185	206	47	5	1.71	.242
	22	88	268	77	13	2.03	.691
	23	39	256	130	14	2.27	.671
	24	98	218	104	21	2.11	.613
	25	21	243	161	13	2.38	.677
	26	81	309	49	1	1.93	.762
Duty $\alpha=.750^*$	27	209	201	30	3	1.61	.568
	28	86	306	38	3	1.90	.869
	29	79	328	31	1	1.90	.880
	30	80	303	51	2	1.95	.856
	31	93	306	33	2	1.87	.865

** α = Reliability of subscale to the total score*

Correlation

Items were evaluated for correlation between variables using the Pearson Product Coefficient (r) for continuous data and Spearman rho (ρ) for the ranked data. Analysis included inter-scale correlations, correlation between respondent characteristics and subscale scores, and correlations between subscales and the report to work (RTW) decision.

Inter-scale correlation. The Pearson r was used to analyze inter-scale correlation, with a result of .30-.70 to indicate positive correlation. Each *Loss* subscale (i.e., Loss of Order, Loss of Security, Loss of Trust, Loss of Freedom) correlated significantly with the others and with the total PREP Tool score, indicating that the subscales were reflective of each other (Table 7).

Table 7

Inter-scale Correlations (n = 442)

Subscale Variable	Pearson Correlation	Order	Security	Trust	Freedom	Duty	Total Score without RTW
Order	r	1					
Security	r	.628*	1				
Trust	r	.538*	.599*	1			
Freedom	r	.413*	.369*	.356*	1		
Duty	r	.257*	.283*	.388*	.358*	1	
Total Score without RTW	r	.776*	.779*	.803*	.670*	.628*	1

* $p = <.001$

Respondent characteristic correlation. There was no correlation demonstrated between demographic information and either the subscale scores or the specific variable of RTW. This finding suggests that demographic considerations alone are not a predictor of whether someone would report to work in the pandemic scenario presented in this study.

Comparison of Yes and No Responses on the RTW Item

A series of analyses were done to explore characteristics and differences between participants who indicated that they would report to work and those who responded that they would not. Survey item number 26, *I will report to work as usual* appears as the final item in the Loss-themed section of the survey. For this portion of the analysis, item number 26 was removed from the score of the Loss of Freedom subscale and from the overall PREP Tool score and was used as an outcome variable. For purposes of discussion, this outcome variable will be referred to as the RTW item. Responses to the RTW item were re-coded into a Yes/No response, with *Strongly Agree* and *Agree* comprising the Yes-RTW category and *Disagree* and *Strongly Disagree* comprising the No-RTW designation. Recoding the RTW response to a categorical format allowed for exploration of differences between the Yes-RTW and the No-RTW groups. Significantly more respondents made up the Yes-RTW group ($n = 390$, 88.6%) than the No-RTW group ($n = 50$, 11.4%).

Spearman's Rho analysis. The Yes-RTW group's response to individual survey items was assessed using Spearman's rho (ρ) correlation coefficient. This analysis demonstrated a relationship between the ranking on certain PREP Tool items and the

RTW decision. Therefore, this analysis inferred that these highly correlated items could reliably serve as predictors in the RTW decision. Table 8 summarizes this correlation.

Table 8

Correlation between PREP Tool Items and the Yes RTW Response

Sub-scale	Item	Spearman's Rho (ρ) Correlation Coefficient	Sig. (2-tailed)
Order	1	.279	.000
	2	.358	.000
	3	.348	.000
	4	.203	.000
	5	-.065	.176
	6	.252	.000
	7	.245	.000
Security	8	.230	.000
	9	.235	.000
	10	.231	.000
	11	.290	.000
	12	-.203	.000
	13	.343	.000
	14	.401	.000
Trust	15	.364	.000
	16	.266	.000
	17	.335	.000
	18	.299	.000
	19	.234	.000
	20	.239	.000
	21	-.165	.001
Freedom	22	.441	.000
	23	.336	.000
	24	.305	.000
	25	.384	.000
	26	omitted	
Duty	27	-.062	.193
	28	.365	.000
	29	.347	.000
	30	.387	.000
	31	.376	.000

Mann-Whitney U median analysis. This test was used to compare how the Yes-RTW group and the No-RTW group responded to individual survey items, depicted in Table 9. This comparison indicated a significant difference ($p < .05$) in 22 of 30 measures. The eight items that were not significantly different between the groups will be discussed in Chapter 5.

Table 9

Comparison of Yes and No Responses on the RTW Item for Each PREP Tool Item

Subscale	Item	Mann-Whitney U	Assumptive Significance
Order	1	6516.50	.000**
	2	5753.50	.000**
	3	7104.00	.000**
	4	8190.00	.043*
	5	9663.00	.909
	6	7834.00	.008*
	7	8896.00	.188
Security	8	8731.50	.141
	9	8569.50	.116
	10	8129.00	.031*
	11	7843.50	.007*
	12	7723.00	.010*
	13	5674.50	.000**
	14	6802.50	.000**
Trust	15	4858.00	.000**
	16	8091.00	.027*
	17	8103.00	.019*
	18	8387.00	.054
	19	8634.50	.122
	20	9089.00	.350
	21	7940.00	.019*
Freedom	22	5253.00	.000**
	23	6205.00	.000**
	24	6196.50	.000**
	25	4980.00	.000**
	26	Omitted	
Duty	27	8705.00	.170
	28	6834.00	.000**
	29	7232.50	.000**
	30	7307.00	.000**
	31	7525.00	.001*

* $p < .05$. ** $p < .01$

In addition to analysis of Yes-RTW and No-RTW group responses to individual survey items, differences between *Loss* subscale scores were examined using the *t*-test. Results indicate that all subscales played a role in the RTW decision for all respondents with significant differences between the Yes-RTW and the No-RTW groups in all subscale categories (Table 10).

Table 10

Comparison of Subscale Scores and Yes and No Responses on the RTW Item

Subscale	<i>M</i>	<i>SD</i>	<i>t</i>	Sig. (2-tail)
Loss of Order	2.17	.40	5.127	.000**
Loss of Security	2.11	.36	4.054	.000**
Loss of Trust	1.83	.44	2.482	.013*
Loss of Freedom	2.07	.36	11.815	.000**
Sense of Duty	1.85	.40	3.747	.000**

* $p < .05$, ** $p < .001$

Respondent Characteristics in Relation to RTW Decision

To explore the role of respondent characteristics in the RTW decision, a *t*-test was done. Responses were no different between the Yes-RTW and the No-RTW group related to work shift, salaried versus exempt status, years in the profession, years working at the facility, adult dependants in the home, or pets in the home. However, several respondent characteristics did result in a statistically significant difference in the RTW decision (Table 11).

Table 11

Respondent Characteristics Linked to RTW Decision

Demographic	Report to Work		Chi Square (χ^2)	Assumptive Sig. (2-tailed)
	Yes	No		
Male Gender				
Count	5	106	6.925	.008
Expected Count	12.5	98.5		
Standard Residual	- 2.1	.8		
Minor Child				
Count	26	134	5.655	.017
Expected Count	18.5	141.5		
Standard Residual	1.8	- .6		
Dept: Administrative Services				
Count	15	39	19.438	.001
Expected Count	6.2	47.8		
Standard Residual	3.6	- 1.3		
Dept: Support Services				
Count	5	94	19.438	.001
Expected Count	11.3	87.7		
Standard Residual	- 1.9	0.7		
Job: Administrative Services				
Count	19	82	9.976	.041
Expected Count	11.7	89.3		
Standard Residual	2.1	- 0.8		

Gender played a role, with males less likely than expected to respond *no* on the RTW question but not significantly more likely to respond *yes*. Respondents with a minor child/children in the home were more likely than expected to say *no* on RTW.

The respondent's work department was a significant factor in the RTW decision in some cases. Employees of Administrative Service departments were more likely to say *no* on RTW than expected. Employees of Support Services departments were less likely to say *no* to RTW than expected. Other work departments, categorized as In-Patient Care Departments, In-Patient Ancillary Services Departments, and Out-Patient Departments showed no greater difference than expected between the Yes-RTW and No-RTW groups.

The respondent's job title was a significant factor in the RTW decision in only one category. Administrative services employees were more likely to say *no* to RTW than expected. Other job titles, categorized as Patient Care—Nurses, Patient Care Professional—Non-Nurses, Patient Care Technicians, and Support Service employees showed no greater difference than expected between the Yes-RTW and No-RTW groups.

Phase 3: Exploratory Factor Analysis of PREP Tool Instrument

Factor analysis was used to assess the PREP Tool pilot data, to determine how many latent variables were underlying the set of items in the instrument. Results were used to condense this information, resulting in a refined, final version of this new instrument. Exploratory factor analysis, using principle component analysis, was used to organize the data and to determine its underlying structure. Confirmatory factor analysis will be conducted on future administration of the completed tool to explore the pattern of relationships identified in this pilot study.

Factor Extraction

Following data condensation, factor extraction took place using the SPSS factor analysis program. Eigenvalues were determined for each variable (survey item) and put into a matrix. Each factor was extracted from this matrix and, as a result, the amount of

information in each successive factor is less than its predecessors. This data was depicted in a scree plot (Figure 2), which displayed the magnitude of each eigenvalue (vertical axis) against the ordinal numbers (horizontal axis). When plotted in the scree plot, the progression of factors had a point at which the information dropped off noticeably around the eigenvalue of 1.0, typical of this type of analysis. This drop off point corresponded with the six components identified as meaningful factors represented by the data.

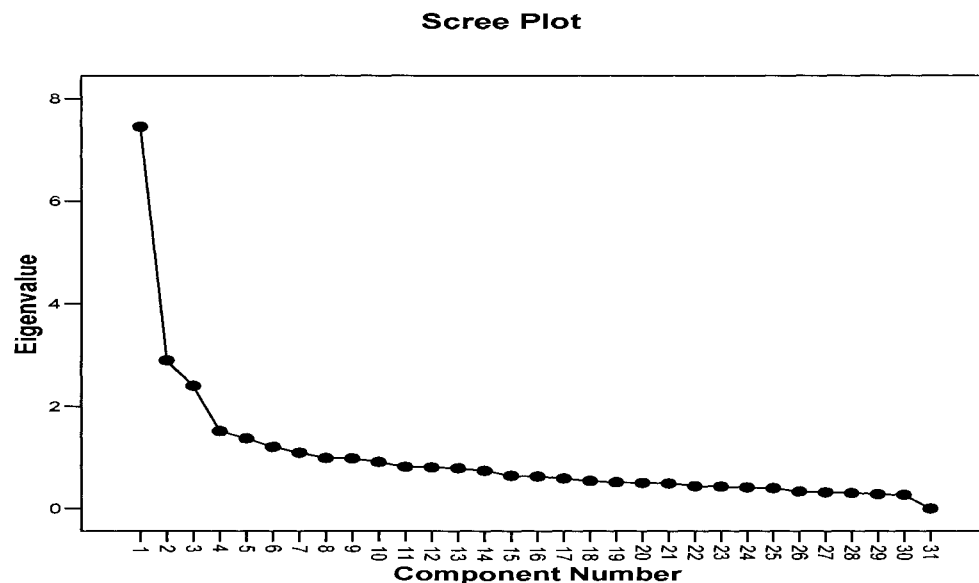


Figure 2. Scree plot for PREP Tool data

Factor Rotation

Once the condensing phase of exploratory factor analysis was completed, a second stage was undertaken: factor rotation using the normalized varimax method. Factor rotation yielded a six-factor component matrix containing items with a factor loading cutoff point of greater than 0.30. A theme was identified for the clusters of items loaded to each factor. These factor themes were: Order and Security (Factor 1), Sense of Duty (Factor 2), Trust in Leaders (Factor 3), Personal Protection (Factor 4), Work Role

(Factor 5), and Fears and Concerns (Factor 6). Items that failed to load conclusively to one factor over another were singled out for further analysis. Table 12 depicts the six-factor rotated component matrix with loadings greater than 0.50 bolded.

Table 12

Rotated Component Matrix and Factor Loadings

Item	Factor Number and Theme					
	1 Order & Security	2 Sense of Duty	3 Trust in Leaders	4 Personal Protection	5 Work Role	6 Fears/ Concerns
3	.540				.438	
4	.722					
6	.585		.324			
7	.650					
8	.710		.313			
9	.726					
10	.730					
11	.566		.324			
25	.426					
18	.375		.662			
19	.426		.474			
20	.389		.564			
16			.618			
17			.719			
22			.365			
28		.795				
29		.806				
30		.765				
31		.804				
23		.303		.310		
13				.617		
14				.580		
15				.745		
1					.745	
2					.677	
24					.516	
5						.714
12						.476
21						.512

Logistic Regression

In order to identify what indicators were most predictive of in the RTW decision, logistic regression was applied to all individual items, original subscales, and factor analysis theme subscales. To identify the PREP Tool survey items most predictive of the RTW decision, a comparison was made between the logistic regression of both the most individually predictive items and the logistic regression of the six factor analysis theme subscales.

Items 1-25 and 27-31 were analyzed using backward method logistic regression with all items entered. Items identified as the most predictive in the report to work decision are depicted in Table 13.

Table 13

Individual Items Most Predictive in the Report to Work Decision

Item	Odds Ratio	Sig.	CI ₉₅
2	.420	.004*	.233, .755
5	2.045	.043*	1.022, 4.094
13	.374	.002*	.203, .689
14	.403	.012*	.198, .822
15	.475	.018*	.255, .882
20	1.884	.091*	.904, 3.927
22	.433	.008*	.233, .806
24	.444	.002*	.264, .746
25	.222	.000**	.104, .476

* $p < .05$, ** $p < .001$

Logistic regression was used on the original subscales to determine which of these were most predictive in the report to work decision (Table 14)

Table 14

Original Subscale Report to Work Predictability

Subscale Title	Beta Weight	Sig.
Loss of Freedom	-6.358	.000**
Loss of Security	-2.024	.003*
Loss of Trust	1.152	.048*
Sense of Duty ^a	-.278	.617
Loss of Order ^b	-.209	.719

^a variable removed on step 3. ^b variable removed on step 2.

* $p < .05$, ** $p < .001$.

Logistic regression was applied to the six factors identified in the factor rotation and loading analysis to assess which of these new factors were most predictive in the report to work decision (Table 15).

Table 15

Factor Analysis Theme Subscales and Report to Work Predictability

Factor Ranking	Factor Number, Theme and Items	Beta Weight	Sig.
1	Factor 4: Personal Protection Items 13, 14, 15	-2.670	.000**
2	Factor 5: Work Role Items 1,2, 24	-1.908	.000**
3	Factor 2: Sense of Duty Items 28, 29, 30, 31	-.949	.029*
4	Factor 3: Trust in Leaders ^a Items 16, 17, 18, 20	-.443	.317
5	Factor 1: Order and Security ^b Items 3, 4, 6, 7, 8, 9, 10, 11	.132	.811
6	Factor 6: Fears and Concerns ^c Items 5, 21	.128	.802

^a variable removed on step 4. ^b variable removed on step 3. ^c variable removed on step 2.

*p < .05, **p < .001.

To determine the items most predictive of the RTW decision, a comparison was made between logistic regression of both the most *individually* predictive RTW items and the logistic regression of the six factor analysis theme subscales results. This assessment identified the following PREP Tool items common to both and, therefore, highly predictive indicators.

- Item 2: I believe that I will be able to make necessary adjustments in meeting family needs to maintain my job responsibilities.
- Item 13: I will be able to work despite having people I know personally (e.g. friends, co-workers) die as a result of this disaster.
- Item 14: I will report to work if there is an effective antiviral medication available.
- Item 15: I will still come to work, even if antiviral medications are **not** available for my protection.
- Item 24: The position I hold and the job I do would be essential in a pandemic emergency.

Reassessment Following Exploratory Factor Analysis

A reliability analysis was done on the factor analysis theme-subcales and on the survey items identified as highly predictive of the RTW decision. Result are depicted in Table 16.

Table 16

Reliability Analysis of Factor Analysis Theme Subscales and Highly Predictive Items

Factor Analysis Theme Subscale	Item	Cronbach's Alpha (α)
Personal Protection	13	.809
$\alpha = .730$	14	.806
	15	.842
Work Role	1	.847
$\alpha = .721$	2	.826
	24	.749
Sense of Duty	28	.900
$\alpha = .713$	29	.906
	30	.910
	31	.915
Trust in Leaders	16	.783
$\alpha = .816$	17	.866
	18	.844
	20	.822
Order and Security	3	.780
$\alpha = .802$	4	.810
	6	.785
	7	.790
	8	.850
	9	.821
	10	.813
	11	.805
Fears and Concerns	5	.839
$\alpha = .510$	21	.840
RTW Question to Total Score	26	.683

Exploratory factor analysis indicated that certain items failed to load decisively to the 6 factor matrix. To determine if removing these items would strengthen the reliability of the instrument, re-analysis was performed assuming these exclusions. Re-calculated/revised original subscale and item response reliability analysis (Table 17) and re-calculated/revised inter-scale correlations (Table 18) indicated that the reliability of the instrument was stronger with the items retained.

Table 17

Recalculated Cronbach's Coefficient Alpha (Revised Version)

Sub-scale	Item	Original Alpha (α)	Recalculated Alpha (α)
Order	1	.709	.784
	2	.737	.823
	3	.795	.868
	4	.747	.802
	5	.266	-
	6	.756	.777
	7	.729	-
Security	8	.769	-
	9	.737	-
	10	.741	.655
	11	.771	.669
	12	.301	.512
	13	.586	.724
	14	.621	.698
Trust	15	.503	.672
	16	.788	.922
	17	.872	.916
	18	.873	-
	19	.842	-
Freedom	20	.853	-
	21	.242	.570
	22	.691	.724
	23	.671	.725
	24	.613	.599
	25	.677	.724
	26	.762	-
Duty	27	.568	-
	28	.869	.900
	29	.880	.906
	30	.856	.910
	31	.865	.915

* α = Reliability of subscale to the total score

Note. RTW Question to Shortened (Revised) total (Cronbach's alpha = .701)

Table 18

Recalculated Inter-scale Correlations (Revised Version)

Subscale Variable	Pearson Correlation	Order	Security	Trust	Freedom	Duty	Total Score without RTW
Order	<i>r</i>	1					
Security	<i>r</i>	.501*	1				
Trust	<i>r</i>	.435*	.331*	1			
Freedom	<i>r</i>	.478*	.514*	.255*	1		
Duty	<i>r</i>	.288*	.337*	.356*	.351*	1	
Total Score without RTW	<i>r</i>	.775*	.730*	.689*	.709*	.656*	1

* $p < .001$ *Summary*

The goal of this study was to determine if HCWs' fears and concerns are a predictor of their willingness to report to work. This study approached this goal using two aims and this chapter reported results as they related to these aims: Aim 1 was to identify fears and concerns HCWs have in regard to working during a sustained biologic emergency. Aim 2 was to develop an instrument designed to study the relationship between these fears and concerns and the HCW's RTW decision. The PREP Tool's development, pilot administration, and presentation of results fulfills the goal of this study by introducing a valid new instrument able to quantitatively assess HCWs' fears and concerns and to use these findings as a predictor of the RTW decision. Results reported in this chapter included descriptive analysis of participation, psychometric

analysis of the PREP Tool survey items, and exploratory factor analysis of the PREP Tool instrument as a whole. A discussion of these results is presented in Chapter 5.

CHAPTER 5

Discussion

This chapter presents a discussion this study's findings, including new insights gained through both the process of developing the PREP Tool and analysis of this new instrument's pilot results. Prior to this study, a deficit existed between qualitative understanding of this issue and quantitative evaluation. The PREP Tool bridges this gap, providing a valid new instrument that can be used by hospitals to assess their employees' concerns and intentions related to disaster response. Discussion of these findings includes methodological considerations, limitations, and analysis of results. Implications for theory, nursing science, and nursing practice are presented as well. The final portion of this chapter offers recommendations for future research.

Discussion of Findings Related to PREP Tool Development

Establishing Validity

Before discussing the findings of the pilot study, it is important to describe measures taken to establish the validity of this new instrument. These measures were incorporated into the PREP Tool's development from its inception to its completion.

Construct validity. Several actions were taken to assure construct validity of the survey items. Following the literature review, an expert panel was convened to participate in the development of the PREP Tool. The participants were chosen for their expertise in disaster preparedness, health care delivery, employee relations, workplace law, and

research study design and analysis. The principle investigator provided representation in the area of occupational health. This expert panel participated in the development of the survey's introductory scenario, selection of demographic questions, and development of the survey items. Construct validity was further enhanced by pretesting the semi-final version of the PREP Tool with a focus group. Observation and interaction with this group, including their feedback on the survey items was used to refine the final pilot version of the tool and the administration process used in the pilot study.

Internal validity. To maintain internal validity, the survey administration process was carried out in a uniform, consistent manner. The same information and request for access to their staff was sent to each manager to minimize variation in their emphasis on this study as an agenda item of their staff meeting. Hard-copy surveys (rather than electronic) were used to assure that the introduction, distribution, and collection were done in a uniform manner. All data collection was done by the principle investigator. Data collection was concentrated to a 3 month period to minimize external effects (positive or negative), such as changes in local, national, or world events that could influence responses.

External validity. Threats to external validity were identified with the goal of ensuring that inferences from the pilot results could be generalized to other groups of HCWs. The hospital selected for the pilot was a mid-sized urban acute care facility that offers all typical emergency and routine in-patient and out-patient service lines. Care was taken to include a cross section of pilot participants that were representative of the hospital employee population as a whole. This was achieved by administering the PREP Tool to participants from 24 different departments, including in-patient care departments, in-patient ancillary service departments, out-patient departments, administrative service

departments, and support service departments. Participants represented 33 different job titles, classified into 5 designations: patient care: nurses, patient care professionals: non-nurses, patient care technicians, administrative service workers, and support service workers. Other participant demographics were identified as important components of external validity. Care was taken to include proportionate employee representation of gender, work shift, and hourly versus salaried/exempt payroll status.

Statistical conclusion validity. Threats to statistical conclusion validity were overcome by achieving adequate sample size. Collecting 452 surveys in this pilot exceeded the proposal data set goal of 300, recognized as the minimum for good reliability (Mertler & Vannatta, 2005). As a result, psychometric and exploratory factor analysis were able to be performed with valid results, to be discussed later in this chapter.

Identification of Fears and Concerns (Study Aim 1)

O’Boyle and associates (2006) conducted a qualitative study on the beliefs, concerns, and feelings of HCWs who anticipated that they would be expected to work during a biological disaster event. The disturbing result was an over-arching theme: fear of abandonment. In order to more fully understand this concept, the disaster literature was reviewed with a focus on the experience of the HCW. Four construct *Loss*-themes emerged: loss of order, loss of security, loss of trust, and loss of freedom. These constructs or factors served as the latent variables of this study. In order to measure these latent variables, 5-8 scale items were developed based on each *loss*-theme. Factor analysis indicated that in some cases, items originally categorized into one loss-themed subscale better correlated with another designation. However, aspects of all of the original subscales came through analysis as relevant.

Results indicated that this particular study group had a high degree of confidence and trust in their organization and as a result 88% ($n = 390$) answered that they would report to work as usual. Even so, responses to the individual survey items revealed that loss-related fears and concerns exist, even among those willing to set them aside and report to work anyway. Examining the responses of the 11.4% ($n = 50$) who indicated that they would not report to work as usual provided insight into issues of highest concern.

Loss of order. The literature revealed that HCWs were concerned with their lack of knowledge regarding biologic emergencies, an unfamiliarity with current disaster plans, and fear of being overwhelmed in the event of a large-scale disaster. This study provided further evidence of these concerns by demonstrating a significant difference ($p < .001$) between the *Loss of Order* subscale scores and the *Yes* and *No* responses on the RTW item. Exploratory factor analysis revealed that the common thread in this section was the HCW's concern with being able to function effectively in their work role. Therefore, *Work Role* better represented the focus of HCW concern in this section and when viewed in this light, also demonstrated a significant ($p < .001$) link with RTW predictability.

Loss of security. Concerns identified in the literature included the hospital's ability to safeguard them from harm and attention to the HCW's personal needs during the disaster. Results from this study indicated that this is an area of concern for HCWs and that security perceptions make a significant ($p < .001$) difference in whether they will RTW. Exploratory factor analysis revealed an underlying theme of *Personal Protection* within this subscale and items loading to this factor (items 13, 14, and 15) were shown to be among the strongest predictors of RTW.

Loss of trust. The literature cited studies, especially post-disaster reviews, in which HCWs lacked confidence in hospital leaders' candor, honesty, and presence during the event. Another identified concern was whether they would be cared for in the event of an injury or illness resulting from their work during the emergency. This study provided evidence of these concerns by demonstrating a significant ($p < .05$) difference between the *Loss of Trust* subscale scores and the *Yes* and *No* responses on the RTW item.

Loss of freedom. The literature gave examples of HCW concern with freedom of choice when personal responsibilities vied with professional responsibilities. Also of concern was the freedom to come and go from work, incorporating issues such as safe travel and being required to stay beyond the usual shift. The issue of the individual's perception of how essential their position would be in a pandemic was explored. Another concern expressed by participants in previous studies was whether co-workers would report to work. It is interesting to see the disproportion in this study, with 88% indicating that they would report to work, but only 60% believed that their co-workers would report to work as usual. Results from this study indicated that these *Loss of Freedom* concerns influenced the RTW decision significantly ($p < .001$).

Conclusion. The pilot version of the PREP Tool was able to contribute quantitative data to substantiate the fears and concern previously identified through qualitative research. By achieving Aim 1 of this study, the body of knowledge is expanded.

Developing the PREP Tool (Study Aim 2)

Study Aim 2 was to develop an instrument designed to study the relationship between fears and concerns and the HCW's reporting to work decision. This aim was

approached in 2 phases: The first phase was to take the fears and concerns (validated in Aim 1) and demonstrate a relationship with the RTW decision. This will be discussed in this section. The second phase of Aim 2 was to complete development of the PREP Tool. This was accomplished following an evaluation of individual survey items, presented in the next section of this chapter. Results of this item-by-item evaluation were used to select the most valid and predictive items for the final version of the PREP Tool.

Fears and concerns and the RTW decision. The significance of fears and concerns in the RTW decision was illustrated by the strong correlation between PREP Tool responses and the RTW variable. During development, it was postulated that demographics such as number of years in the profession or generational attitudes or dependants in the home may play a key role in the RTW decision. However, there were no correlations demonstrated between respondent characteristics and the RTW variable, indicating that demographics alone were not a predictor of this decision. Therefore, it was important to fully understand those factors that were strong predictors. Correlation between the ranked PREP Tool items and the Yes/No RTW variable was explored using Spearman's Rho correlation coefficient. This analysis demonstrated a significant correlation ($p < .001$) in 28 of 30 items. A Mann-Whitney U was used to compare how the Yes-RTW group and the No-RTW group responded to individual survey items. This comparison indicated significant difference ($p < .05$) in 22 of 30 items.

Conclusion. PREP Tool items were developed to assess fears and concerns related to reporting to work in a pandemic emergency. Of these 31 items, 20 demonstrated reliability in measuring what was intended. Further analysis identified the highly correlated and highly distinguishing items that can reliably serve as predictors in the RTW decision.

Discussion of Individual Survey Items

Overview of Analysis Methodologies

Each PREP Tool Item was analyzed using 4 methodologies. This section will discuss these results and how they were used to decide whether to retain, eliminate, or change items from the instrument. Findings for each survey item are summarized in Table 19.

Table 19

Comparison of Analysis Results for PREP Tool Items

Subscale	Item	Achieved Reliability: Cronbach's Alpha ($\alpha > .70$)	Achieved Correlation: Spearman's Rho ($p < .001$)	Achieved Distinguishing between Yes- & No-RTW Mann-Whitney U ($p < .05$)	Factor Analysis Loading (FAL): FAL $> .500$ Factor Loaded to:
Order	1				Work Role
	2				Work Role
	3				Work Role
	4				Order/Security
	5	No	No	No	No
	6				Fears
	7				Order/Security
Security	8				Order/Security
	9				Order/Security
	10				Order/Security
	11				Order/Security
	12	No			No
	13	No			Personal Protection
	14	No			Personal Protection
Trust	15	No			Personal Protection
	16				Trust
	17				Trust
	18			No	Trust
	19			No	No
	20			No	Trust
	21	No			Fears
Freedom	22	No			No
	23	No			No
	24	No			Work Role
	25	No			No
	26		NA	NA	NA
Duty	27	No	No	No	No
	28				Duty
	28				Duty
	30				Duty
	31				Duty

Reliability assessment. Cronbach's coefficient alpha was used for the initial reliability assessment, assessing each item within the five original subscales. All

subscales and twenty of the original 31 items achieved a score above the .70 benchmark. The 11 items failing to meet this level of reliability were found in all subscales except Loss of Trust.

Correlation with the RTW response. Spearman's Rho was used to compare each item with the RTW response to Item 26, *I will report to work as usual*. Results showed 28 of 30 demonstrated a significant ($p < .001$) correlation.

Comparison of Yes and No responses on RTW Item. A Mann-Whitney U was used to compare how the Yes-RTW group and the No-RTW group responded to individual items. Results showed 22 of 30 demonstrated a significant ($p < .05$) ability to distinguish/predict RTW.

Exploratory factor analysis. Factor extraction and rotation allowed items to be loaded onto 6 factors. A factor analysis loading of .50 or greater was selected as this evaluation's criteria for inclusion. Results indicated that 22 of 30 items met this benchmark.

Loss of Order Subscale Items

The Loss of Order subscale was made up of items 1-7. Items 1, 2, 3, 4, 6, and 7 demonstrated reliability, correlation, RTW prediction, and factor loading. The item in this subscale that failed to achieve an alpha of .70 was item 5: *I will be faced with the challenge of compromising the quality of work I will be able to provide*. This item was 1 of 3 reverse-scored items, all of which achieved alpha less than .70. Item 5 was also determined to have a low correlation ($\rho = .065$; $p = .176$) with the RTW response and low ability to distinguish between the Yes-RTW and No-RTW groups ($U = 9663.000$; $p = .909$). All analyses indicated that item 5 was a poor predictor and therefore, this item was eliminated from the final PREP Tool.

Loss of Security Subscale Items

The Loss of Security subscale was made up of items 8-15. Items 10 and 11 demonstrated reliability, correlation, RTW predictability, and factor loading onto the Order/Security factor and therefore, they were retained in the PREP Tool. Item 10 reads, *The hospital will remain secure, even if there is chaos and rioting in the community.* Item 11 reads, *Infection Control procedures and personal protective equipment will keep me safe as I work with the victims of this disaster.*

Items 8 and 9 demonstrated reliability, correlation, and factor loading onto the Order/Security factor. However, they failed to demonstrate RTW predictability. Item 8 reads, *The hospital will provide for my safety at work.* Item 9 reads, *The hospital has made plans for staff needs, including supplies of food, water, rest areas, and hygiene items.*

The Loss of Security subscale had 4 items that failed to meet reliability alpha of .70. The first was item 12: *I am worried about how I will emotionally deal with working with the suffering and dying victims of this disaster.* This item also failed to load to one of the six factors in the exploratory factor analysis. However, this item did show a correlation with the RTW response ($p = .203$; $p < .001$) and showed the ability to distinguish between the Yes-RTW and the No-RTW groups ($U = 7723.000$; $p = .01$). The wording of this item may have been problematic, encompassing too many separate themes (i.e., emotions, worry, work duties, suffering, dying, victims) for which participants could respond. This was compounded by the reversed-score directionality of the item. Item 12 will be reworded to eliminate the reversed-score orientation and re-evaluated in future testing. The new wording of Item 12 will be, *I will be able to emotionally deal with working with the suffering and dying victims of this disaster.*

Three other items in the Loss of Security subscale failed to meet reliability alpha of .70 and these items read as follows: Item 13, *I will be able to work despite having people I know personally (e.g. friends, co-workers) die as a result of this disaster.* Item 14, *I will report to work if there is an effective antiviral medication available.* Item 15, *I will still come to work, even if antiviral medications are **not** available for my protection.* All 3 items achieved significance in their correlation and predictive scores and the factor analysis may hold the answer to the failed reliability assessment. These items were originally written for the subscale Loss of Security, against which these items were assessed for reliability. However exploratory factor analysis loaded these items into the new factor identified as Personal Protection. Logistic regression of all 6 factors showed Personal Protection to be the strongest in RTW predictability. Therefore, items 13, 14, and 15 were retained.

Loss of Trust Subscale Items

The Loss of Trust subscale was made up of items 16-20. Item 16 and 17 demonstrated reliability, correlation, RTW predictability, and factor loading onto the Trust factor. These items were retained in the tool. Item 16 reads, *A safe work environment is a priority in our hospital.* Item 17 reads, *Hospital leadership values my safety.*

Items 18, 19, and 20 demonstrated reliability and correlation but failed to demonstrate RTW predictability. Items 18 and 20 loaded to the Trust factor, but item 19 did not. Item 18 reads, *The hospital leaders will be open and honest in their communications with the staff throughout the emergency.* This item was developed to assess HCW confidence in hospital leaders' candor and honesty in an emergency. Because the trust in leadership component was better assessed by items 16 and 17 and the

communication component was better assessed by item 6, Item 18 was eliminated from the final PREP Tool.

Item 19 reads, *I will see the hospital leaders making rounds in my area during the emergency*. This item was developed to assess HCW's perceptions of leadership presence in an emergency. In the factor analysis loading (FAL) this item failed to load decisively to any one factor, but instead was split between Order/Security (FAL = .426) and Trust (FAL = .474). Because this item failed to demonstrate RTW predictability and because the key components were covered by stronger scoring items, Item 19 was eliminated from the final PREP Tool.

Item 20 reads, *I will be taken care of if I become injured or ill as a result of working during this emergency*. In the factor analysis this item loaded to the Trust factor as intended (FAL = .564). Analysis of this item produced confounding results. While the Mann-Whitney *U* median test failed to demonstrate significance between *Yes* and *No* responses in the RTW item, logistic regression indicated this item to be one of the most predictive of RTW. Item 20 will be retained and re-evaluated in future testing.

Loss of Freedom Subscale Items

The Loss of Freedom subscale was made up of Items 21-26. Items in this subscale were intended to assess HCW concerns related to the freedom of choice in the decision of reporting to work and in leaving at the end of the shift. It was also the intention to assess the freedom to choose priorities related to home responsibilities. All 6 items failed to achieve a coefficient alpha above .70. This is believed to be related to this subscale's less-defined focus. While the other scales were fairly concrete and distinct, the Loss of Freedom subscale was more of a stretch in an attempt to group important but possibly less related concerns. The Loss of Freedom failed to emerge in factor analysis and all but

2 items (21 and 24) failed to decisively load to any of the 6 factors. While this Loss of Freedom subscale was shown to be an ineffective factor/category, several individual items proved strong RTW predictors. They were evaluated individually for retention in the final PREP Tool.

Item 21 reads, *I am concerned about 'bringing home' something contagious that will put my family at risk*. This reversed-scored item was one that loaded to the *Fears* factor. It achieved correlation with the RTW decision and RTW predictability and was retained. This item will be re-worded to eliminate the reversed-scored orientation and re-evaluated in future testing. The new wording will be, *Safety measures will be in place to prevent "bringing home" something contagious that will put my family at risk*.

Item 22 reads, *It is acceptable to me that I may be required to stay at work beyond my usual shift*. This item achieved correlation with the RTW decision and RTW predictability and addressed an aspect that is not covered by any other items. Because reliability was close to the .70 benchmark ($\alpha = .691$) and this item loaded weakly to the Trust factor (FAL = .365), this item was retained and will be re-evaluated in future testing.

Item 23 reads, *I will be able to safely travel to and from work during a pandemic*. This item achieved correlation with the RTW decision and RTW predictability. It did load weakly to the Sense of Duty factor (FAL = .303) and the Personal Protection factor (FAL = .310). Because it addresses an aspect not covered elsewhere, Item 23 was retained and will be re-evaluated in future testing.

Item 24 reads, *The position I hold and the job I do would be essential in a pandemic emergency*. It is believed that this item's failure to achieve reliability within the subscale Loss of Freedom was related to a poor fit between this item and this particular

subscale. This item achieved correlation with the RTW decision and RTW predictability. It loaded decisively to the Work Role factor. This item was retained.

Item 25 reads, *Most of my co-workers will report to work as usual*. This item achieved correlation with the RTW decision and RTW predictability. This item's reliability fell just below the .70 benchmark ($\alpha = .677$) but this is believed to be related to the less defined focus of Loss of Freedom subscale into which this unique item was placed. This item only loaded weakly (FAL = .426) to the Order and Security factor, again explained by the unique nature of the item. Because of the intriguing connection between responses to Item 26, *I will report to work as usual* and Item 29, *My sense of duty to my co-workers is an important factor in my decision whether to report to work*, Item 25 was retained and will be re-evaluated in future testing.

Item 26, *I will report to work as usual* was used throughout analysis as the outcome variable. This item was retained.

Sense of Duty Subscale Items

The Sense of Duty subscale was an exploratory section, designed to collect data on a previously unstudied phenomenon. This section was made up of items 27-31.

Item 27 read, *My sense of duty to my **family** is an important factor in my decision whether to report to work*. This item generated predominantly (90%) agreement responses, with a 46% *strongly agree* response ($n = 209$) and a 44% *agree* response ($n = 201$). This across-the-board agreement made this item a poor predictor of RTW because it failed to distinguish between the *yes* and the *no* RTW groups. In factor analysis, item 27 failed to load to the Sense of Duty factor, which will be discussed in the next section. However, because this item was part of an exploratory section, item 27 will remain in the next version of the PREP Tool and re-evaluated in future testing.

The other Sense of Duty items (28-31) demonstrated reliability, correlation, RTW predictability, and factor loading onto the Duty factor. These items will be retained in order to continue data collection for future exploration of this theme. Item 28 reads, *My sense of duty to my **patients** is an important factor in my decision whether to report to work.* Item 29 reads, *My sense of duty to my **co-workers** is an important factor in my decision whether to report to work.* Item 30 reads, *My sense of duty to my **hospital** is an important factor in my decision whether to report to work.* Item 31 reads, *My sense of duty to the **community** is an important factor in my decision whether to report to work.*

Factor Analysis Themes

One of the measures of the PREP Tool's construct validity was exploratory factor analysis (EFA). In order to apply EFA, a measurement model was needed to depict the hypothesized relationship between variables. The original factors were the 4 Loss-themes (i.e., Loss of Order, Loss of Security, Loss of Trust, Loss of Freedom) and the exploratory theme, Sense of Duty. A comparison of the original conceptual measurement model shown in Chapter 1 (Figure 1) and the results of EFA added a new perspective to data analysis. The PREP Tool items clustered to 6 factors that were labeled according theme: Factor 1: Order and Security, Factor 2: Sense of Duty, Factor 3: Trust in Leaders, Factor 4: Personal Protection, Factor 5: Work Role, and Factor 6: Fear and Concerns. Analysis of these new themes added insight.

Factor 1: Order and Security. Separated in the original model, EFA indicated that items designed for these two concepts overlapped. All items that loaded to Factor 1 were from either the original Loss of Order subscale or Loss of Security subscale. Logistic regression ranked Factor 1 number five of six, in terms of RTW predictability.

Factor 2: Sense of Duty. With the exception of item 27, all of the original exploratory Sense of Duty items loaded to the EFA Factor 2 of the same name. Item 27 (*My sense of duty to my **family** is an important factor in my decision whether to report to work.*) loaded weakly (FAL = .268) to EFA Factor 2. Item 27 differed from the other four items developed for the original Sense of Duty subscale, in that it linked a *non-work-related* component (family) with the RTW component. The other four linked *work-related* components (i.e., patients, co-workers, hospital, community) and the RTW component. The agreement-responses on Item 27 likely reflect an expected strong sense of duty to family, unrelated to other factors. As a result, this item was found to be an unreliable indicator of the RTW decision in all analyses, including EFA. Logistic regression ranked Factor 2 number three of six, in terms of RTW predictability ($p < .05$).

Factor 3: Trust in Leaders. All of the original Loss of Trust items loaded decisively to the EFA Factor 3, identified as Trust in Leaders. Logistic regression ranked Factor 3 number four of six, in terms of RTW predictability.

Factor 4: Personal Protection. This was a new theme that emerged with EFA. The three items loading to this factor were originally designed for the Loss of Security subscale. Item 13, with its personal coping aspect loaded to this factor. Item 13 reads, *I will be able to work despite having people I know personally (e.g. friends, co-workers) die as a result of this disaster.* Item 14 and 15 dealt with antiviral protection also loaded to Factor 4. Item 14 reads, *I will report to work if there is an effective antiviral medication available.* Item 15 reads, *I will still come to work, even if antiviral medications are **not** available for my protection.* Logistic regression ranked Factor 4 number one of six, in terms of RTW predictability ($p < .001$).

Factor 5: Work Role. This was a new theme that emerged with EFA. The 3 items loading to this factor included two originally designed for Loss of Order: Item 1, *My current knowledge of pandemic flu gives me a sense of confidence that I can do my regular duties under these circumstances* and Item 2, *I believe that I will be able to make necessary adjustments in meeting my family needs to maintain my job responsibilities.* The third item that loaded to Factor 5 (originally categorized in the Loss of Freedom subscale) was Item 24, *The position I hold and the job I do would be essential in a pandemic emergency.* Logistic regression ranked Factor 5 number two of six, in terms of RTW predictability ($p < .001$).

Factor 6: Fears and Concerns. This was a new theme that emerged with EFA. While all items in the PREP Tool were designed to assess concerns, the items loading to Factor 6 had a more pronounced *worried* or *anxious* connotation. This was due in part to the reverse-scored wording in each. Item 5 reads, *I will be faced with the challenge of compromising the quality of work I will be able to provide.* Item 21 reads, *I am concerned about 'bringing home' something contagious that will put my family at risk.* Item 12 loaded weakly (FAL = .476) to Factor 6 and reads, *I am worried about how I will emotionally deal with working with the suffering and dying victims of this disaster.* Logistic regression ranked Factor 6 number six of six, in terms of RTW predictability.

Limitations

External Validity

External validity was a priority throughout the development of the PREP Tool and measures were taken to ensure that inferences from the pilot study could be generalized to other groups of HCWs. Nevertheless, disproportionate representation in certain areas has been identified as a limitation of this study.

Shifts represented. One example of disproportion is over-representation of day-shift participants. In the pilot, 82.8% ($n = 362$) of the participants worked day shift. Comparing this with the study hospital's overall proportion of day shift employees (69.5%; $n = 1,740$) indicates an under-representation of other shifts. Because a hospital is an around-the-clock enterprise, concerns and the RTW intentions of all shifts are relevant and will need to be more fully explored in future assessment.

Language limitations. While the pilot achieved a good cross section of departments and job titles, a notable limitation was choosing to exclude non-English speaking/reading employees. This was necessary to preserve the internal validity of the pilot, maintaining consistency in the administration process. Using an un-validated written translation or having an interpreter as part of the administration process would have compromised the consistency desired in this phase of instrument development. As a consequence, the PREP Tool was not piloted with the Environmental Services Department, made up of many employees who speak primarily Spanish. Pandemic-related concerns and the RTW intentions of this department are very relevant and not having an assessment for this group is a limitation that will remain in place until a validated translation can be developed.

Management Presence

The survey was conducted at staff meetings with the department manager present and was administered by the principle investigator, a member of the hospital's management team. Though every effort was made to assure privacy of answers during and after survey completion, it is possible that concerns with management presence in the room could have caused reluctance to express true feelings. There may have been a desire to please the manager or researcher with positive answers. There may have been

reluctance to give a negative answer for fear of repercussion. This limitation will be explored by comparing pilot results with future computer-based electronic administration of the PREP Tool, eliminating management presence.

Site Bias

The hospital at which the PREP Tool pilot was conducted was typical in many ways, in terms of size, service lines, and job categories. However, the facility did have a tradition of placing an emphasis on safety and disaster preparedness. It had experienced recent disaster response, both actual and drill simulations, with staff engagement and positive outcomes. As a consequence, a positive bias may have existed, as demonstrated by 88% indicating that they would report to work as usual. Expansion to other hospitals will allow an evaluation of possible site bias.

Implications for Nursing and Recommendations for Future Research

Implications for Theory

The phenomenon of loss has been widely investigated in relation to victims of many types of natural, accidental, and intentional disasters. However, fewer studies have considered the loss experienced by the HCWs in the disaster's aftermath or the feared loss anticipated by the HCW contemplating being called upon to work in the midst of a disaster. The few studies that have examined this issue have been primarily qualitative, relying on hypothetical scenarios or post-event first-person accounts. Though limited, these qualitative studies provided the foundation for the development of this study's instrument designed to quantitatively evaluate HCW's disaster-response concerns. Gaining insight into issues of concern to HCWs can be useful in many aspects of the health care delivery system, adding an evidence-based component to the body of

knowledge in areas such as safety, education, disaster preparation, staffing, employee-management relations, team building, the Employee Assistance Program, and employee satisfaction initiatives. This study also gives new insights into the HCW's RTW decision and provides an instrument designed to evaluate this largely unexplored aspect of healthcare.

Implications for Practice

Several useful tools exist for calculating resource needs in various disaster scenarios, including a pandemic. However, when it comes to the HCW-component of the equation, most do not take into consideration all of the factors that underlie the complex RTW decision. Having an instrument that is a reliable predictor of the HCW's RTW-intentions will allow for several positive improvements in disaster preparation practice. Results can provide insight into barriers in the RTW decision, allowing organizations to select strategies to mitigate when possible and plan-around when necessary. Results can provide guidance in wisely channeling resources where they will have the greatest impact. Results can identify instances where staff education could play a role in increasing HCW knowledge and confidence in the disaster plan in place. Formulating realistic, evidence-based *next generation* plans could benefit patients and staff as well.

Implications for Future Research

Testing the finalized PREP Tool. The finalized PREP Tool is now ready to test on a larger, more diverse sample. Once this administration has taken place, the finalized PREP Tool will be analyzed for reliability and effectiveness in assessing HCW concerns and RTW intentions. Confirmatory Factor Analysis will be conducted on future PREP Tool data to explore patterns of relationships identified by Exploratory Factor Analysis of

the pilot study data. If results continue to indicate that this is a valid and reliable instrument, findings will be submitted for publication in the professional literature.

Future use of the PREP Tool. The PREP Tool has the potential for use by individual hospitals desiring insight into their employees' perceptions or pandemic disaster preparedness and RTW intentions. It also has potential for use in collaboration with other resource-prediction tools, adding the crucial HCW-component to the equation.

Expansion of study. The PREP Tool was designed around a pandemic influenza scenario. However, it could be adapted to other natural, accidental, or intentional mass-casualty disasters. Examining similarities and differences in HCW concerns and RTW intentions in different types of emergency responses may yield new insights. It may also be useful to expand to HCWs in non-hospital settings, such as clinics, public health departments, physician offices, and to first-responders.

Exploration of concepts. Sense of Duty was an exploratory concept included in this study. Unlike the four *Loss*-themes, Sense of Duty was not specifically linked to the RTW decision in the literature. However, the researcher was intrigued with this topic as potentially playing a role in the RTW decision as well as influencing other facets of nursing practice. Therefore, five exploratory scale items developed to assess Sense of Duty were included. These items will be included in the finalized versions of the PREP Tool to allow for continued data collection and future analysis.

Another exploratory concept was identified: Fear of abandonment. This overarching theme emerged throughout the literature review of the *Loss*-themes of this study. It was included in the conceptual measurement model for the PREP Tool as a latent variable (Figure 1) but was not the focus of this research. Expanded exploration of the fear of abandonment concept would make interesting study in the future.

Summary

Pilot testing of the PREP Tool indicated that it is a valid new instrument ready for testing on a larger, more diverse sample to assess HCWs' pandemic disaster concerns and report-to-work intentions. Results could be beneficial to organizations in several ways. First, identifying specific areas of confidence or lack of confidence in HCW's perception of existing disaster plans could provide opportunities for evidenced-based strategic planning. Second, by channeling resources and education towards actual identified needs could result in a more focused and practical disaster response plan. A third implication for practice is the opportunity to gain measurable insight into predictors of the report-to-work decision. This information could allow hospitals to mitigate factors that they can influence and to plan-around factors that they cannot. This is crucial in any disaster event, all the more so in a sustained disaster scenario, such as an influenza pandemic. Acting upon the insights gained from a PREP Tool assessment could result in a stronger, more achievable disaster plan carried out by a loyal, more confident staff resulting in a safer, more protected community.

References

- American Nurses Association (2001). *Code of ethics for nurses with interpretive statements*. Washington, DC: Author
- Beaton, R., & Murphy, S. (2002). Psychosocial responses to biological and chemical terrorist threats and events. *American Association of Occupational Health Nurses*, 50(4), 182-189.
- Chaffee, M. (2006). Making the decision to report to work in a disaster. *American Journal of Nursing*, 106(9), 54-57.
- Chiang, H-H., & Wear, S. E. (2003). To have or to be: Ways of caregiving identified during recovery from the earthquake disaster in Taiwan. *Journal of Medical Ethics*, 31, 154-158.
- Cone, D. C., & Cummings, B. A. (2006). Hospital disaster staffing: If you call, will they come? *American Journal of Disaster Medicine*, 1(1), 28-36.
- Cresswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, CA: Sage.
- DeVellis, R. F. (2003). *Scale development theory and applications*. Thousand Oaks, CA: Sage.
- Fager, J. (Executive Producer). (2006, September 24). *60 minutes: Katrina doc denies mercy killings* [Television broadcast]. CBS News. Retrieved April 22, 2007, from <http://www.cbsnews.com/stories/2006/09/21/60minutes/main2030603.shtml>
- French, E., Sole, M., & Byers, J. F. (2002). A comparison of nurses' needs/concerns and hospital disaster plans following Florida's Hurricane Floyd. *Journal of Emergency Nursing*, 28(2), 111-117.

- Gebbie, K., & Qureshi, K. (2002). Emergency and disaster preparedness: Core competencies for nurses. *American Journal of Nursing*, 102(1), 46-51.
- Gershon, R. R. M., Gemson, D., Qureshi, K., & McCollum, M. (2004). Terrorism preparedness training for occupational health professional. *Journal of Occupational and Environmental Medicine*, 46, 1204-1209.
- Gershon, R. R. M., Karkashian, C. D., Grosch, J., Murphy, L., Escamilla-Cejudo, A., Fanagan, P. A., et al. (2000). Hospital safety climate and its relationship with safe work practices and workplace exposure incidents. *American Journal of Infection Control*, 28(3), 211-221.
- Giarratano, G., Orlando, S., & Savage, J. (2008). Perinatal nursing in uncertain times: The Katrina effect. *Maternal Child Nursing*, 33(4), 249-257.
- Good, L. (2008). Ethical decision making in disaster triage. *Journal of Emergency Nursing*, 34(2), 112-115.
- Green, B. L. (1994). Psychological research in traumatic stress: An update. *Journal of Traumatic Stress*, 7(3), 341-365.
- Grieger, T., Fullerton, C., & Ursano, R. (2004). Posttraumatic stress disorder, depression, and perceived safety 13 months after September 11. *Psychiatric Services*, 55(9), 1061-1063.
- Hasin, D. S., Keyes, K. M., Hatzenbuehler, M. L., Aharonovich, E. A., & Alderson, D. (2007). Alcohol consumption and posttraumatic stress after exposure to terrorism: effect of proximity, loss, and psychiatric history. *American Journal of Public Health*, 97(12), 2268-2275.

- Hayward, M. (2003). Management issues surrounding the United Kingdom health services' ability to deal effectively with major incidents involving bioterrorism. *Journal of Nursing Management*, 11, 197-207.
- Hobfoll, S., Tracy, M., & Galea, S. (2006). The impact of resource loss and traumatic growth on probable PTSD and depression following terrorist attacks. *Journal of Traumatic Stress*, 19(6), 867-878.
- Holloway, H., Norwood, A., Fullerton, C., & Ursano, R. (1997). The threat of biological weapons: Prophylaxis and mitigation of psychological and social consequences. *Journal of the American Medical Association*, 278(5), 425-427.
- Holloway, I., & Wheeler, S. (2002). *Qualitative research in nursing*. Oxford, UK: Blackwell.
- Irvin, C., Cindrich, L., Patterson, W., Ledbetter, A., & Southhall, A. (2007). Hospital personnel response during a hypothetical influenza pandemic: Will they come to work? *Academic Emergency Medicine*. 14(Suppl. 5), 1-13. Retrieved September 9, 2007 from http://www.aemj.org/cgi/content/full/14/5_suppliment_1/S13a
- Irvin, C. (2007). [Bird flu survey]. Unpublished survey instrument
- Iserson, K., & Pesik, N. (2003). Ethical resource distribution after biological, chemical, or radiological terrorism. *Cambridge Quarterly of Healthcare Ethics*. 12, 455-464.
- Jöreskog, K. G., & Sörbom, D. (2006). LISREL for Windows [Computer software]. Lincolnwood, IL: Scientific Software Int'l.
- Keane, A., Houldin, A. D., Allison, P. D., Jepson, C., Shults, J., Nuamah, I. F., et al. (2002). Factors associated with distress in urban residential fire survivors. *Clinical Scholarship*, 34(1), 11-17.

- Koh, D., Lim, M. K., Chia, S. E., Ko, S. M., Qian, F., Tang, H. K., et al. (2005). Risk perception and impact of severe acute respiratory syndrome (SARS) on work and personal lives of health care workers in Singapore. *Medical Care*, 43(7) 676-682.
- Kruus, L., Karras, D., Seals, B., Thomas, C., & Wydro, G. (2007). Healthcare worker response to disaster conditions. *Academic Emergency Medicine*. 14, (Suppl. 5), 1-189. Retrieved September 9, 2007 from http://www.aemj.org/cgi/content/ful/14/5_suppliment_1/S189
- Larkin, G., & Arnold, J. (2004). Ethical considerations in emergency planning, preparedness, and response to acts of terrorism. *Prehospital and Disaster Medicine*. 18(3), 170-178.
- Leifer, S. L., & Glass, L. K. (2008). Planning for mass disaster in the 1950s. *Nursing Research*, 57(4), 237-244.
- Lofland, J., Snow, D., Anderson, L., & Lofland, L. (2006). *Analyzing social settings*. Belmont, CA: Wadsworth/Thompson Learning.
- Lukes, E. (2002). Terrorism: Insights from the front line. *American Association of Occupational Health Nursing Journal*, 50(4), 162-164.
- McVey, P., & Bertolasi, S. (2005). Katrina and Mississippi nurses: First person accounts. *Mississippi RN*, 67(4), 6-7.
- Mertler, C., & Vannatta, R. (2005). *Advanced and multivariate statistical methods*. Glendale, CA: Pyrczak.
- Mitka, M. (2006). National plan for pandemic flu unveiled. *Journal of the American Medical Association*, 295(23), 2707-2708.
- Moore, D., Gilbert, M., Saunders, S., Bryce, E., & Yassi, A. (2005). Occupational health and infection control practices related to severe acute respiratory syndrome:

- Health care worker perceptions. *American Association of Occupational Health Nursing Journal*, 53(6), 257-266.
- Murphy, S. A. (1989). An explanatory model of recovery from disaster loss. *Research in Nursing & Health*, 12, 67-76.
- Norris, F. H. (2002). 60,000 disaster victims speak: Part I. An empirical review of the empirical literature, 1981-2001. *Psychiatry: Interpersonal and Biological Processes*, 65, 207-239.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory*. New York: McGraw Hill.
- O'Boyle, C., Roberson, C., & Secor-Turner, M. (2006). Nurses' beliefs about public health emergencies: Fear of abandonment. *American Journal of Infection Control*, 34(6), 351-357.
- Powell-Young, Y., Baker, J., & Hogan, J. (2006). Disaster ethics, health care and nursing: A model case study to facilitate the decision making process. *Online Journal of Health Ethics*, 1(2). Retrieved on April 22, 2007 from <http://ethicsjournal.umc.edu/ojs2/index.php/ojhe/article/view/57/67>
- Qureshi, K., Gershon, R., Sherman, M. F., Straub, T, Gebbie, E., McCollum, et al. (2005). Health care worker's willingness to report to duty during catastrophic disasters. *Journal of Urban Health*, 82(3), 378-388.
- Riba, S., & Reches, H. (2002). One year later: The impact and aftermath of September 11: When terror is routine: How Israeli nurses cope with multi-casualty terror. *Online Journal of Issues in Nursing*, 7. Retrieved February 12, 2007, from http://www.nursingworld.org/ojin/topic19/tpc19_5.htm

- Ruderman, C., Tracy, C. S., Bensimon, C. M., Bernstein, M., Hswryluck, L., Shaul, R. Z., et al. (2006). *BMC Medical Ethics* 2006, 7(5). Retrieved February 12, 2007, from <http://www.biomedcentral.com/1472-6939/715>
- Sattler, D. N., Glower de Alvarado, A. M., Blandon de Castro, N., Van Male, R., Zetino, A. M., Vega, R. (2006). El Salvador earthquakes: Relationship among acute stress disorder symptoms, depression, traumatic event exposure, and resource loss. *Journal of Traumatic Stress*, 19(6), 879-893.
- Shadel, B., Rebman, T., Clements, B., Chen, J., & Evans R. G. (2003). Infection control practitioners' perceptions and educational needs regarding bioterrorism: Results from a national needs assessment survey. *American Journal of Infection Control*, 31, 129-134.
- Smith, E. (2007). Emergency health care workers' willingness to work during major emergencies and disasters. *Australian Journal of Emergency Management*, 22(2), 21-24.
- Syrett, J. I., Benitez, J. G., Livingston, W. H., & Davis, E. A. (2006). Will emergency health care providers respond to mass casualty incidents? *Prehospital Emergency Care*, 11(1), 49-54.
- State of California, Emergency Medical Services Authority (2006). Hospital incident command center job action sheets. Retrieved April 21, 2007, from www.emsa.ca.gov/hics/job_action_sheets.asp
- U.S. Department of Health and Human Services (2006a). Health and human services pandemic influenza plan. Retrieved March 28, 2008, from www.hhs.gov/pandemicflu/plan.html

- U.S. Department of Health and Human Services (2006b). National strategy for pandemic influenza: Implementation plan. Retrieved March 28, 2008, from www.whitehouse.gov/homeland/pandemic-influenza.html
- U.S. Department of Health and Human Services (2006c). What is influenza pandemic? Retrieved March 28, 2008, from www.pandemicflu.gov/general/whatis.html
- Walsh, F. (2007). Traumatic loss and major disasters: Strengthening family and community resilience. *Family Process*, 46(2), 207-227.
- Waltz, C. F., Strickland, O. L., Lenz, E. R. (2004). *Measurement in Nursing and Health Research*. New York: Springer.
- Wilson, S. (2005). Factors affecting implementation of the U.S. smallpox vaccination program, 2003. *Public Health Reports*, 120, 3-5.
- World Health Organization. (2005). Ten things you need to know about pandemic influenza. Retrieved April 2, 2008, from www.who.int/entity/csr/disease/influenza/pandemic10things/en/

Appendix A:

Themes and Corresponding PREP Tool Survey Items

Themes to Explore	Items: <i>Strongly Agree, Agree, Disagree or Strongly Disagree?</i>
I. Loss of order <ul style="list-style-type: none"> • Perceived knowledge of pandemic flu • Knowledge of current disaster plans • Concerns with “overwhelm” 	<ol style="list-style-type: none"> 1. My current knowledge of pandemic flu gives me a sense of confidence that I can do my regular duties under these circumstances. 2. I believe that I will be able to make necessary adjustments in meeting my family needs to maintain my job responsibilities. 3. The hospital will remain organized and under control. 4. The hospital has a plan and all needed supplies in place to manage a large increase in the number of patients. 5. I will be faced with the challenge of compromising the quality of work I will be able to provide. 6. Information and updates to staff will be well organized, timely, and reliable. 7. Assignments will be made so that my skills will be used appropriately in a disaster.
II. Loss of safety <ul style="list-style-type: none"> • Confidence of hospital’s ability to safeguard them from harm • Attention to personal needs 	<ol style="list-style-type: none"> 8. The hospital will provide for my safety at work. 9. The hospital has made plans for staff needs, including supplies of food, water, rest areas, and hygiene items. 10. The hospital will remain secure, even if there is chaos and rioting in the community. 11. Infection Control procedures and personal protective equipment will keep me safe as I work with the victims of this disaster. 12. I am worried about how I will emotionally deal with

	<p>working with the suffering and dying victims of this disaster.</p> <p>13. I will be able to work despite having people I know personally (e.g. friends, co-workers) die as a result of this disaster.</p> <p>14. I will report to work if there is an effective antiviral medication available.</p> <p>15. I will still come to work, even is antiviral medications are not available for my protection.</p>
<p>III. Loss of trust</p> <ul style="list-style-type: none"> • Confidence in hospital leaders' candor and honesty • Confidence in leadership's presence in an emergency • Confidence that they will be cared for in the event of an injury/illness resulting from their work 	<p>16. A safe work environment is a priority in our hospital.</p> <p>17. Hospital leadership values my safety.</p> <p>18. The hospital leaders will be open and honest in their communications with the staff throughout the emergency.</p> <p>19. I will see the hospital leaders making rounds in my area during the emergency.</p> <p>20. I will be taken care of if I became injured or ill as a result of working during this emergency.</p>
<p>IV. Loss of freedom</p> <ul style="list-style-type: none"> • To report to work or not • To attend to family 	<p>21. I am concerned about "bringing home" something contagious that will put my family at risk.</p> <p>22. It is acceptable to me that I may be required to stay at work beyond my usual shift.</p> <p>23. I will be able to safely travel to and from work during a pandemic.</p> <p>24. The position I hold and the job I do would be</p>

	<p>essential in a pandemic emergency.</p> <p>25. Most of my co-workers will report to work as usual.</p> <p>26. I will report to work as usual.</p>
<p>V. Other Themes</p> <ul style="list-style-type: none"> • Feelings of responsibility to their patients • Feelings of responsibility to their co-workers • Family/home responsibilities vs. work responsibilities 	<p>27. My sense of duty to my <u>family</u> is an important factor in my decision whether to report to work.</p> <p>28. My sense of duty to my <u>patients</u> is an important factor in my decision whether to report to work.</p> <p>29. My sense of duty to my <u>co-workers</u> is an important factor in my decision whether to report to work.</p> <p>30. My sense of duty to my <u>hospital</u> is an important factor in my decision whether to report to work?</p> <p>31. My sense of duty to the <u>community</u> is an important factor in my decision whether to report to work.</p>

Appendix B

PREP Tool Survey Packet



Dear Colleague,

As an Employee Health Nurse, I am interested in many topics related to employee wellness and safety. One of my specific interests is disaster preparedness.

I am studying concerns that healthcare workers like you have had when faced with the prospect of working during a prolonged emergency, such as a “Bird Flu” pandemic.

I would appreciate your help with this study by taking a few minutes to complete the attached survey. Your participation is voluntary; if you prefer not to participate (or wish to stop at any point) simply return your blank or incomplete form to the collection envelope when it comes around.

To assure that your privacy is protected, I will not ask for your name on the survey and will not share your individual answers. You have the right to ask questions and to have a copy of the results so I have listed my contact information is below.

Information learned from your responses will be used by Scripps in future disaster planning. In addition, findings will be used in my doctoral dissertation research and shared with others interested in disaster preparation. Your responses will contribute to both patient and employee safety. Thank you for you participation in this survey.

Sincerely,

Linda Good

Manager, Employee Health Scripps Memorial Hospital, La Jolla &
Student, University of San Diego, Hahn School of Nursing & Health Science
Phone: 858-626-7649 E-mail: Good.linda@scrippshealth.org

- If you agree to participate, **please go to the next page** for the introductory scenario and survey.
- If you prefer not to participate, please place your uncompleted survey in the collection envelope.

Please read the following scenario and respond to the statements below:

Imagine that there is a world wide outbreak of influenza (pandemic flu). In the past six weeks our community has been overwhelmed with flu like illness. Vaccine will not be available for six months. The outbreak will return in waves for a period of one year. Everyone will be impacted at home, work and in the community for a period of time, likely to exceed a year.

What this means to San Diego county:

- School and child care closures
- School education limited to computer and television
- Public gatherings prohibited
- Compromised public support infrastructure by an estimated 30% (shortages in gas, food, transportation, security, healthcare)
- Widespread unemployment due to public and private business closures
- Widespread illness in San Diego County

What this means to Scripps:

- All hospitals, clinics and home health agencies are overwhelmed and beyond surge capacity
- Majority of ill patients must be cared for at home due to lack of hospital bed availability.
- Death rate of ill is estimated at 60%
- Staffing shortage of 30-50%
- Alternate care sites required to aide the large volume of patients

What this means to you:

Please take a few minutes to imagine how this scenario would impact your life. Rate (Circle) how strongly you would agree or disagree with the following statements:

					For Office Use
1. My current knowledge of pandemic flu gives me a sense of confidence that I can do my regular duties under these circumstances.	Strongly Agree	Agree	Disagree	Strongly Disagree	O1
2. I believe that I will be able to make necessary adjustments in meeting my family needs to maintain my job responsibilities.	Strongly Agree	Agree	Disagree	Strongly Disagree	O2
3. The hospital will remain organized and under control.	Strongly Agree	Agree	Disagree	Strongly Disagree	O3

4. The hospital has a plan and all needed supplies in place to manage a large increase in the number of patients.	Strongly Agree	Agree	Disagree	Strongly Disagree	O4
5. I will be faced with the challenge of compromising the quality of work I will be able to provide	Strongly Agree	Agree	Disagree	Strongly Disagree	O5
6. Information and updates to staff will be well organized, timely, and reliable.	Strongly Agree	Agree	Disagree	Strongly Disagree	O6
7. Assignments will be made so that my skills will be used appropriately in a disaster.	Strongly Agree	Agree	Disagree	Strongly Disagree	O7
8. The hospital will provide for my safety at work.	Strongly Agree	Agree	Disagree	Strongly Disagree	S8
9. The hospital has made plans for staff needs, including supplies of food, water, rest areas, and hygiene items.	Strongly Agree	Agree	Disagree	Strongly Disagree	S9
10. The hospital will remain secure, even if there is chaos and rioting in the community.	Strongly Agree	Agree	Disagree	Strongly Disagree	S10
11. Infection Control procedures and personal protective equipment will keep me safe as I work with the victims of this disaster.	Strongly Agree	Agree	Disagree	Strongly Disagree	S11
12. I am worried about how I will deal emotionally with working with the suffering and dying victims of this disaster.	Strongly Agree	Agree	Disagree	Strongly Disagree	S12
13. I will be able to work despite having people I know personally (e.g. friends, co-workers) die as a result of this disaster.	Strongly Agree	Agree	Disagree	Strongly Disagree	S13
14. I will report to work if there is an effective antiviral medication available.	Strongly Agree	Agree	Disagree	Strongly Disagree	S14
15. I will still come to work, even if antiviral medications are not available for my protection.	Strongly Agree	Agree	Disagree	Strongly Disagree	S15
16. A safe work environment is a priority in our hospital.	Strongly Agree	Agree	Disagree	Strongly Disagree	T16

17. Hospital leadership values my safety.	Strongly Agree	Agree	Disagree	Strongly Disagree	T17
18. The hospital leaders will be open and honest in their communications with the staff throughout the emergency.	Strongly Agree	Agree	Disagree	Strongly Disagree	T18
19. I will see the hospital leaders making rounds in my area during the emergency.	Strongly Agree	Agree	Disagree	Strongly Disagree	T19
20. I will be taken care of if I became injured or ill as a result of working during this emergency.	Strongly Agree	Agree	Disagree	Strongly Disagree	T20
21. I am concerned about “bringing home” something contagious that will put my family at risk	Strongly Agree	Agree	Disagree	Strongly Disagree	F21
22. It is acceptable to me that I may be required to stay at work beyond my usual shift.	Strongly Agree	Agree	Disagree	Strongly Disagree	F22
23. I will be able to safely travel to and from work during a pandemic.	Strongly Agree	Agree	Disagree	Strongly Disagree	F23
24. The position I hold and the job I do would be essential in a pandemic emergency.	Strongly Agree	Agree	Disagree	Strongly Disagree	F24
25. Most of my co-workers will report to work as usual.	Strongly Agree	Agree	Disagree	Strongly Disagree	F25
26. I will report to work as usual.	Strongly Agree	Agree	Disagree	Strongly Disagree	F26
27. My sense of duty to my <i>family</i> is an important factor in my decision whether or not to report to work	Strongly Agree	Agree	Disagree	Strongly Disagree	L27
28. My sense of duty to my <i>patients</i> is an important factor in my decision whether or not to report to work.	Strongly Agree	Agree	Disagree	Strongly Disagree	L28
29. My sense of duty to my <i>co-workers</i> is an important factor in my decision whether or not to report to work.	Strongly Agree	Agree	Disagree	Strongly Disagree	L29
30. My sense of duty to my <i>hospital</i> is an important factor in my decision whether or not to report to work?	Strongly Agree	Agree	Disagree	Strongly Disagree	L30
31. My sense of duty to the <i>community</i> is an important factor in my decision whether or not to report to work.	Strongly Agree	Agree	Disagree	Strongly Disagree	L31

Thank you for completing this portion of the survey.
 You will now be asked to provide some additional information.
All responses will be kept confidential.

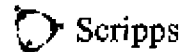
	For Office Use
1. What is your job title?	P1
2. What department do you work in?	P2
3. What shift do you work? <input type="checkbox"/> Days <input type="checkbox"/> PMs <input type="checkbox"/> Nights	P3
4. Are you paid by the hour? <input type="checkbox"/> Yes <input type="checkbox"/> No	P4
5. How many years have you worked in your profession?	P5
6. How many years have you worked at Scripps?	P6
7. Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female	P7
8. What is your age? <input type="checkbox"/> Under 18 <input type="checkbox"/> 18-31 <input type="checkbox"/> 32-43 <input type="checkbox"/> 44-62 <input type="checkbox"/> 63-75 <input type="checkbox"/> Over 75	P8
9. Do you have a minor child/children in your home? <input type="checkbox"/> Yes: Ages _____ <input type="checkbox"/> No	P9
10. Do you have <u>adult</u> dependant(s) in your home? <input type="checkbox"/> Yes: Relationship(s) _____ <input type="checkbox"/> No	P10
11. Do you have a pet in your home? <input type="checkbox"/> Yes: Number & type of pet(s) _____ <input type="checkbox"/> No	P11
Comments:	

Appendix C

Focus Group Participant Information and Consent Form

IRB#004986

Pre-test Focus Group

**Consent to Participate in Research Study**

You are being asked to participate in a research study to learn more about how hospital employees feel about working during a pandemic flu epidemic. Your answers will **benefit the hospital with future disaster preparedness** to assure that the hospital will be ready and safe if a pandemic or other disaster should occur.

Participation involves reading a brief scenario and responding to a series of statements. You will also be asked for some information about you and your position.

It is possible that responding to questions about a pandemic flu epidemic could be upsetting or tiring to you. **Your participation is voluntary**—so if you prefer not to participate (or wish to stop at any point) simply return your blank or incomplete form to the collection envelope. **There will be no penalty to anyone who declines to participate.**

To assure that **your privacy is protected**, I will not ask for your name on the survey. I will code answers so that responses cannot be traced back to any individual. I will not track or report on who has or has not taken the survey. All surveys will be kept in a confidential, locked cabinet and password-protected computer in a secured location in Employee Health for a minimum of 5 years. You have the right to ask questions and to have a copy of the results and I have listed my contact information below.

Information learned from your responses will be used by Scripps in future disaster planning. In addition, findings will be used in my doctoral dissertation research **and shared (confidentially, without personal identification)** with others interested in disaster preparation.

I wish to participate in this research study.

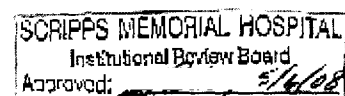
Printed Name

Signature

Date

Linda Good, Principle Investigator

Phone: 858-626-7649

Good.linda@scrippshealth.org

Appendix D

PREP Tool Pretest Interview Guide

1. Opening scenario:

- Was it clear?
- Any difficulty with the bullet point format?
- What was your impression of the scenario/scene being described?

2. Format of questions:

- Was it clear what you were being asked to do?
- Was it clear which choice to circle to express your opinion?

3. Content of questions:

- Were any items difficult to understand?
- Were any items disturbing or offensive?
- Did any question 'hit home' or grab your interest?

4. Methodology:

- Ask their opinion on the plan to give during a staff meeting
 - Can you think of any drawbacks?
 - If someone did not want to participate, do you think it would be comfortable for them to decline?

5. Observe group for the following:

- How long it takes to complete the reading of scenario
- How long it takes to complete questions
- Any notable differences between clinical, clerical, or support

Appendix E

Focus Group Observations

Date: 6/2/08	Start Time: 12:30 pm End Time: 1:30 pm	Location: Canyon Room SMH-LJ
# Participants: 9	Areas Represented: FNS, Rehab, Engineering, Supply Chain, HR/EH, Radiology, ED, Security, Lab Scientist	Jobs Represented: RN (2), Mgr. Food Service, Mgr. Security, Biomedical Engineer, Mgr. Supply Chain, Physical Therapist, EH Coordinator, Lab Scientist

Introduction

Welcomed participants and provided a brief background: The development of an instrument to assess disaster preparedness is being done as a Scripps-initiated study and the write up of the process to be submitted as a doctoral dissertation. A brief overview of the process for developing a survey tool was reviewed, including item development, pilot testing, analysis to establish validity and reliability and the eventual final PREP Tool, to be used systemwide to survey all staff. Today's focus group is an important step in this process and the format of the meeting was reviewed.

Participants will be asked to:

- Read a scenario
- Complete the survey, rating each statement from strongly agree to strongly disagree and answer demographic questions
- Provide feedback to the investigator on the different components of the survey
- Give written consent to participate; confidentiality emphasized and because I would be able to link them with their individual surveys, they were given the option of taking the completed survey with them to shred, leaving the consent form.

The packets were distributed and the participants completed them. When they were finished, the investigator lead a discussion using the following interview guide:

1. Opening scenario:

- **Was it clear?**

Comments:

- *Group consensus: Yes, clear, easy to understand*
- *"Gloomy"...gave the sense that scenario could really happen.*
- *The suggestion was made to change "may happen" to more of a certainty*

- **Any difficulty with the bullet point format?**

Comments:

- *Effective—able to give a lot of information very concisely*
- *Easier to get the sense of the scenario than longer paragraph*

- **What was your impression of the scenario/scene being described?**

Comments:

- *“Grim” ... “Sobering”*
- *One participant said she would like to see additional information on what percentage of those exposed get ill*
- *“What came to my mind was that I would have a better commute” (group laughter)*

2. Format of questions:

- **Was it clear what you were being asked to do?**
- **Was it clear which choice to circle to express your opinion?**

Comments:

- *Consensus of group was that both were clear*

3. Content of questions:

- **Were any items difficult to understand?**
 - *One participant said she would like to see additional information on what percentage of those exposed get ill*
- **Were any items disturbing or offensive?**
 - *None identified as such*
- **Did any question ‘hit home’ or grab your interest?**
 - *“On quite a few I found myself thinking ‘I hope so’ [such as the hospital being prepared] but not confident”*
- **What questions would you add?**
 - *“Add If you could get to work would you report to duty”*
 - *Ask a more direct question about would you go out of your way to come to work.*
 - *How long could I sustain coming to work if others don’t come in?*
 - *Add Provided your family is safe would you come in?*

- *Add something to get at whether or not the participant was the sole provider vs. 2 parent family (for both economics and child care)*
- *Only 2 questions on “stress”—would like additional*

4. Methodology:

- **Ask their opinion on the plan to give during a staff meeting**

Comments:

- *Consensus of group was that this should work fine*
- **If someone did not want to participate, do you think it would be comfortable for them to decline?**

Comments:

- *Have manager step out while they complete survey*
- *“We have a lot of ‘paranoia’ in our department—some people will not want to provide the demographic information that might tie them back to their answers.” Suggested they be allowed to opt out of the demographic questions*
- *The group discussed that it might be helpful if I really emphasize how I will be protecting their privacy and identity up front.*

5. Observe group for the following:

- **How long it takes to complete:**
 - **Reading consent:** Approximately 1 minute
 - **Reading of scenario:** Approximately 1 minute
- **How long it takes to complete questions and any notable differences between clinical, clerical, or support :** The 2 RN participants took 9 minutes to complete; others took up to 15 minutes; the Lab Scientist was still working on it after 15 minutes, so I told her to feel free to continue while the group began our discussion (as they were getting restless). She was apparently taking some extra time to write comments to be used later in the focus group discussion, so the added time was most likely not indicative of general completion time requirements.

6. Additional field notes:

- I acknowledged to the focus group participants that due to the small, diverse group, I would be able to identify their individual surveys, even without names—therefore, if anyone was uncomfortable with this, that they could feel free to take

the survey portion of the packet with them for shredding. I let them know that if they chose to go ahead and turn in their completed survey, I would integrate it in later with their department results. All 9 did turn in their completed survey.

- The group seemed to enjoy the opportunity to participate and showed a lot of enthusiasm and interest in the study
- Refreshments were served; Thank you notes sent to all participants following the focus group.

Appendix G

Institutional Review Board Approval Scripps Health



Office for the Protection of Research Subjects

Scripps Memorial La Jolla IRB11025 North Torrey Pines Road, Suite 200
La Jolla, CA 92037**Approval Notice**

Investigator: Linda Good, RN
 Department:
 Project Title: Development of the Provider Response to Emergency Pandemic (PREP) Tool
 Protocol No: 004986 004986 2008 - LAJ
 Risk Category: Minimal Risk
 Date of Review: 5/6/2008
 Type of Review: Expedited Review - NRW

Your research project indicated above was reviewed and approved by the IRB or one of its officers on the review date above. Approval expires one year from this date.

Approval carries with it the understanding that you will inform the Committee promptly should a serious adverse reaction occur, and that you will make no modification to the protocol or consent form (if applicable) without prior approval of the Committee.

The IRB may suspend or terminate the approval of research that is not being conducted in accordance with the requirements set forth by the committee or that has been associated with unexpected serious harm to subjects.

(17 point narrative dated 4-29-08, Dear Colleague letter dated 4-29-08, PREP Tool Survey Instrument version 4-29-08, and Informed Consent for Pre-test Focus Group dated 4-29-08)

Thank you for your cooperation.

IRB Officer

Appendix H

Human Participant Protection Completion Certificate

Completion Certificate

This is to certify that

Linda Good

has completed the **Human Participants Protection Education for Research Teams** online course, sponsored by the National Institutes of Health (NIH), on 10/28/2007.

This course included the following:

- key historical events and current issues that impact guidelines and legislation on human participant protection in research.
- ethical principles and guidelines that should assist in resolving the ethical issues inherent in the conduct of research with human participants.
- the use of key ethical principles and federal regulations to protect human participants at various stages in the research process.
- a description of guidelines for the protection of special populations in research.
- a definition of informed consent and components necessary for a valid consent.
- a description of the role of the IRB in the research process.
- the roles, responsibilities, and interactions of federal agencies, institutions, and researchers in conducting research with human participants.

National Institutes of Health
<http://www.nih.gov>

[Home](#) | [Contact Us](#) | [Policies](#) | [Accessibility](#) | [Site Help](#) | [Site Map](#)

A Service of the National Cancer Institute



FIRST TO KNOW

Appendix I

Final Version of the PREP Tool

Please read the following scenario and respond to the statements below:

Imagine that there is a world wide outbreak of influenza (pandemic flu). In the past six weeks our community has been overwhelmed with flu like illness. Vaccine will not be available for six months. The outbreak will return in waves for a period of one year. Everyone will be impacted at home, work and in the community for a period of time, likely to exceed a year.

What this means to San Diego county:

- School and child care closures
- School education limited to computer and television
- Public gatherings prohibited
- Compromised public support infrastructure by an estimated 30% (shortages in gas, food, transportation, security, healthcare)
- Widespread unemployment due to public and private business closures
- Widespread illness in San Diego County

What this means to Scripps:

- All hospitals, clinics and home health agencies are overwhelmed and beyond surge capacity
- Majority of ill patients must be cared for at home due to lack of hospital bed availability.
- Death rate of ill is estimated at 60%
- Staffing shortage of 30-50%
- Alternate care sites required to aide the large volume of patients

What this means to you:

Please take a few minutes to imagine how this scenario would impact your life. Rate (Circle) how strongly you would agree or disagree with the following statements:

1. My current knowledge of pandemic flu gives me a sense of confidence that I can do my regular duties under these circumstances.	Strongly Agree	Agree	Disagree	Strongly Disagree
2. I believe that I will be able to make necessary adjustments in meeting my family needs to maintain my job responsibilities.	Strongly Agree	Agree	Disagree	Strongly Disagree
3. The hospital will remain organized and under control.	Strongly Agree	Agree	Disagree	Strongly Disagree
4. The hospital has a plan and all needed supplies in place to manage a large increase in the number of patients.	Strongly Agree	Agree	Disagree	Strongly Disagree

5. Information and updates to staff will be well organized, timely, and reliable.	Strongly Agree	Agree	Disagree	Strongly Disagree
6. Assignments will be made so that my skills will be used appropriately in a disaster.	Strongly Agree	Agree	Disagree	Strongly Disagree
7. The hospital will provide for my safety at work.	Strongly Agree	Agree	Disagree	Strongly Disagree
8. The hospital has made plans for staff needs, including supplies of food, water, rest areas, and hygiene items.	Strongly Agree	Agree	Disagree	Strongly Disagree
9. The hospital will remain secure, even if there is chaos and rioting in the community.	Strongly Agree	Agree	Disagree	Strongly Disagree
10. Infection Control procedures and personal protective equipment will keep me safe as I work with the victims of this disaster.	Strongly Agree	Agree	Disagree	Strongly Disagree
I will be able to deal emotionally with working with the suffering and dying victims of this disaster.	Strongly Agree	Agree	Disagree	Strongly Disagree
11. I will be able to work despite having people I know personally (e.g. friends, co-workers) die as a result of this disaster.	Strongly Agree	Agree	Disagree	Strongly Disagree
12. I will report to work if there is an effective antiviral medication available.	Strongly Agree	Agree	Disagree	Strongly Disagree
13. I will still come to work, even if antiviral medications are not available for my protection.	Strongly Agree	Agree	Disagree	Strongly Disagree
14. A safe work environment is a priority in our hospital.	Strongly Agree	Agree	Disagree	Strongly Disagree
15. Hospital leadership values my safety.	Strongly Agree	Agree	Disagree	Strongly Disagree
16. I will be taken care of if I became injured or ill as a result of working during this emergency.	Strongly Agree	Agree	Disagree	Strongly Disagree
17. Safety measures will be in place to prevent “bringing home” something contagious that will put my family at risk.	Strongly Agree	Agree	Disagree	Strongly Disagree

18. It is acceptable to me that I may be required to stay at work beyond my usual shift.	Strongly Agree	Agree	Disagree	Strongly Disagree
19. I will be able to safely travel to and from work during a pandemic.	Strongly Agree	Agree	Disagree	Strongly Disagree
20. The position I hold and the job I do would be essential in a pandemic emergency.	Strongly Agree	Agree	Disagree	Strongly Disagree
21. Most of my co-workers will report to work as usual.	Strongly Agree	Agree	Disagree	Strongly Disagree
22. I will report to work as usual.	Strongly Agree	Agree	Disagree	Strongly Disagree
23. My sense of duty to my <i>family</i> is an important factor in my decision whether or not to report to work	Strongly Agree	Agree	Disagree	Strongly Disagree
24. My sense of duty to my <i>patients</i> is an important factor in my decision whether or not to report to work.	Strongly Agree	Agree	Disagree	Strongly Disagree
25. My sense of duty to my <i>co-workers</i> is an important factor in my decision whether or not to report to work.	Strongly Agree	Agree	Disagree	Strongly Disagree
26. My sense of duty to my <i>hospital</i> is an important factor in my decision whether or not to report to work?	Strongly Agree	Agree	Disagree	Strongly Disagree
27. My sense of duty to the <i>community</i> is an important factor in my decision whether or not to report to work.	Strongly Agree	Agree	Disagree	Strongly Disagree

Thank you for completing this portion of the survey.

**You will now be asked for some additional information.
All responses will be kept confidential**

1. What is your job title?

2. What department do you work in?

3. What shift do you work? ☐ Days ☐ PMs ☐ Nights

4. Are you paid by the hour? ☐ Yes ☐ No

5. How many years have you worked in your profession?

6. How many years have you worked at Scripps?

7. Gender: ☐ Male ☐ Female

8. What is your age? ☐ Under 18 ☐ 18-31 ☐ 32-43
☐ 44-62 ☐ 63-75 ☐ Over 75

9. Do you have a minor child/children in your home?

☐ Yes: Ages _____

☐ No

10. Do you have adult dependant(s) in your home?

☐ Yes: Relationship(s) _____

☐ No

12. Do you have a pet in your home?

☐ Yes: Number & type of pet(s) _____

☐ No

Comments: