Capstone Report 2021

Investigating Communication and Resilience in an Urban Emergency Department During a Pandemic

Kimberly Rusk

Peabody College at Vanderbilt University
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Advisor: Dr. Cynthia Nebel

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Executive Summary

Overview

The COVID-19 pandemic created chaos and communication challenges in Emergency Departments worldwide. The uncertainty related to the novel infection generated volumes of complex questions, including how to test, treat, and care for infected patients while minimizing transmission within the healthcare setting and community. As the primary entry point for COVID-19 patients, emergency departments found themselves on the frontline of a rapidly changing crisis, requiring the preservation and allocation of resources, identification, containment, and treatment of infection, communication with clinical teams, and the seamless coordination of intake. COVID-19 patients rapidly replaced and dominated usual emergency department admissions mandating major adaptations in processes and procedures. Communication, coordination, ingenuity, resilience, and unification of efforts became essential organizational skills in managing the unheard-of demands and extraordinary challenges.

Problem of Practice

This investigation was motivated by practical concerns at the University of Illinois Health System Emergency Department (the UI Health Emergency Department). During the COVID-19 pandemic, UI Health Emergency Department leaders were challenged to develop effective communication strategies that kept staff abreast of rapidly changing information and guided behavior changes. Before developing a strategy to initiate change, however, the leadership team needed to understand which communication strategies were used, the staff member perceptions of the methods, and how staff resilience levels could inform their future communication plans.

Procedures

Data were collected from empathy interviews with three diverse organizational leaders, a Message Board analysis, and a paper-based or online staff survey.

Research Questions and Key Findings

R1: How was information communicated to UI Health Emergency Department staff during the COVID-19 pandemic?

1. UI Health Emergency Department staff reported eleven different methods of communication available and used by the UI Health Emergency Department leadership during the COVID-19 pandemic. The top 4 methods include; Email, Unit Huddle, Face-to-Face, and Staff Meeting.

2. The Message Boards used during the COVID-19 pandemic contained 659 messages (67 days of analysis) in the following categories: 51% Operational, 21% PPE, 6% Support, 15% Testing, and 7% Treatment. 59% of the information changed from the previous day's Board. 49% of the messages were informational only, 25% required a possible behavior change, 14% required same-day action, and 7% required same-day, immediate action.

R2: What were the UI Health Emergency Department staff perceptions of the various communication strategies during the COVID-19?

1. The UI Health Emergency Department staff reported the most effective methods of communication as Unit Huddle, Email, and Face-to-Face.

2. UI Health Emergency Department staff would like to receive information in the future via Unit Huddle, Email, and Face-to-Face methods.

3. During the pandemic, UI Health Emergency Department staff knew who was in charge, 78% of the time (53% "nearly all the time," 25% "often"), and knew who had expertise, 60% of the time (22% "nearly all the time," 38% "often").

4. During the pandemic, **less than half** of the UI Health Emergency Department staff, 47%, felt well informed (16% "nearly all the time," 31% "often").

5. During the pandemic, **an alarming 71%** of the UI Health Emergency Department staff were confused by the communication they received (9% confused nearly all the time, 29% often confused, 33% sometimes confused).

6. The UI Health Emergency Department staff cited Unit Huddle as the most helpful communication method when adaptations or changes were required BEFORE starting the shift, during the shift, and when CRITICAL information is needed before the shift.

7. The UI Health Emergency Department staff cited Face-to-Face communication as most helpful when CRITICAL information was needed DURING their shift.

R3: What is the level of resilience in the UI Health Emergency Department staff?

1. The level of resilience in the UI Health Emergency Department staff is higher than average in all four workplace resilience factor categories based on a 5-point Likert scale. Confident Sense-Making scored highest (4.13), followed by Team Efficacy (4.03), Active Problem-Solving (3.97), and Bricolage (3.96).

Recommendations

There is no single strategy for communicating change; however, the following list of evidence-based best practices and opportunities for integrated processes will help deliver messages to the UI Health Emergency Department staff during times of uncertainty or crisis, like the COVID-19 pandemic. Continuous and effective communication creates knowledge and builds trust that persists in chaotic and uncertain times, allowing the organization to not only survive but bounce back stronger (Kantur & Iseri-Say, 2012).

1. *Integrate Communication Best Practices into all Methods and Approaches*	Communication must be: • Honest • Credible • Personalized • Relevant and focused • Logical explanations • Clear priorities • Actionable • Describe indented behavior outcome • Provide practical instructions
2. *Utilize a Permanent Message Board to Reduce Cognitive Workload and Leverage Resilience Strengths*	When change is constant, unpredictable, and full of uncertainly, a permanent whiteboard posted in a strategic location, such as the nurses' station or next to patient tracking boards, can effectively, inexpensively, and with modest resource expenditures, reach a large number of unit personnel.
3. *Understand the Audience*	Understanding staff perceptions and spending time on self-reflection are critical activities given the survey findings. Listening to staff members and asking about concerns and perceptions will help build better, more effective communication strategies. Self-reflection is a key driver in resilience, as it allows organizations to incorporate insights learned into practice (Duchek, 2020).
4. *Leverage Team Efficacy Skills*	Team efficacy refers to understanding team goals and team roles and demonstrates how well individuals work to achieve an outcome (Mallak, 2017). The UI Health Emergency Department staff should be empowered to communicate with one another. Leaders can help build skills and train team members to communicate by assigning communication tasks and following up to determine success and areas of improvement.
5. *Expand Utilization of Internal Resources*	Consider expanding the use of EPIC and the Intranet Tiles for communication approaches. Embedding messages, change initiatives, or newly released evidence for testing or treatment planning, would offer a real-time point of care opportunity using existing resources.
6. *Consider Targeted and Controlled Social Media Platforms*	Creating an online community to share information, strategic planning, proactive strategies, and strategic responses can be an effective mechanism for distributing critical risk or crisis-related information (Leykin et al., 2016).

Conclusions

Effective communication must be an integrated and ongoing process influenced by the events and requirements of any given situation (Seeger, 2006). There is no simple solution, nor is there a single method that meets all organizational needs in times of crisis. As a matter of best practice, and to reduce the receivers' cognitive demand, communication is more effective when it is clear and simple, appeals to reason and emotion, and is strategically matched to the audience's needs and culture (Reynolds & Seeger, 2005).

Despite the uncertainty, the rapidly fluctuating and conflicting information, the UI Health Emergency Department leadership and staff were heroes in the fight against COVID-19. They balanced the need to minimize transmission, protect and support health care workers, preserve resources, keep abreast of testing and treatment advances, and care for all patients in need. The leaders demonstrated empathy, competency, bricolage, and commitment to the staff, patients, organization, and their community.

In the true spirit of resiliency, the UI Health leaders listened, coped, adapted, and transformed, so they not only emerged from the pandemic but they move forward stronger and better equipped for the next unexpected event or crisis.

Introduction

In early March 2020, the World Health Organization (WHO) declared COVID-19 a pandemic, meaning it is a disease affecting an exceptionally high proportion of the worldwide population (Katella, 2020). COVID-19 is the disease caused by the virus known as the severe acute respiratory syndrome coronavirus (SARS-CoV-2). Shortly after the WHO declaration, the President of the United States declared a national emergency and the global community raced to understand and contain an aggressive infectious disease-causing serious clinical manifestation, including death, at an alarming rate (Halawi et al., 2020).

The COVID-19 pandemic caused unprecedented challenges to healthcare organizations across the world, as the worst public health crisis in a century. Fears of overcrowding emergency departments, hospitals, and depleting personal protective equipment became a reality that seemed nearly inconceivable before the onset of the outbreak (Gaeta & Brennessel, 2020). The virus led to frightening uncertainly for healthcare professionals as it generated volumes of unanswered questions about the unknown spreading of the disease, the unpredictable evolution, and the struggle to find effective treatments (Romiti & Talerico, 2021). As a result, communication, coordination, ingenuity, resilience, and unification of efforts became essential organizational skills to manage the unheard-of demands and challenges.

During the pandemic, leaders in emergency departments had to face unique challenges. As the primary entry point for COVID-19 patients, emergency departments were desperately trying to save lives while racing to expand capacity. Emergency departments found themselves on the frontline of a rapidly changing crisis, requiring the allocation of resources, identification and containment of infection, communication with integral clinic teams, and seamless coordination of intake efforts for efficient movement throughout the system. Patients with the coronavirus rapidly replaced and dominated the usual emergency department admissions. While many emergency department leaders have adapted, endured, and succeeded in times of crisis, the COVID-19 pandemic created an unprecedented fear of the unknown, leading to intense anxiety, a sense of powerlessness, and a need for targeted communication and organizational resilience. Targeted communication is a driver of organizational resilience as it enhances an organization's ability to anticipate, absorb complexity, develop situation-specific responses, and ultimately engage in transformative activities to capitalize on unexpected challenges and change (Lengnick-Hall et al., 2011). In the age of the COVID-19 pandemic, organizational leaders in emergency departments were not treading down well-worn paths; but instead, they were stepping off cliffs into a rapidly changing crisis filled with volatility and the unknown.

Communication plays a critical role in managing crisis situations, such as public health emergencies like the COVID-19 pandemic, where there is an increased need for credible and actionable information. The need stems from high levels of uncertainty, true threats to life or health and often manifests in an urgent necessity for immediate information (Leykin et al., 2016). Effective crisis communication helps mitigate uncertainty and anxiety while creating a direct, rapid, and focused response to the immediate situation. In times of crisis, communication is a strategic mechanism used to achieve particular purposes, such as influencing a group to make sense of social dynamics or events and immediately initiate action (Ruben & Gigliotti,

2016). Effective crisis communication is also designed to reduce and contain harm, initiate and enhance recovery, and promote healing and learning (Reynolds & Seeger, 2005). Communication enables an organization to effectively cope, bounce back, and reintegrate during and after uncertainty and disasters, such as the COVID-19 pandemic (Buzzanell, 2010). Effective communication is a bridge to resiliency, enabling organizations to cope more effectively with crisis and disruption and emerge stronger and better prepared for future events. While the need for a comprehensive communication approach is clear, the mechanisms to deliver this information are not clear.

Organizational Context and Problem of Practice

This study was motivated by practical concerns and the need to develop effective communications strategies that motivate and initiate an action or critical behavior change in an urban emergency department during a rapidly evolving pandemic.

Location of Study

The was conducted at The University of Illinois Hospital & Health Sciences System's Emergency Department (UI Health) in Chicago, Illinois. A part of the University of Illinois at Chicago (UIC), UI Health comprises a clinical enterprise that includes a 462-bed tertiary care hospital, 21 outpatient clinics, and 11 Mile Square Health Center facilities, which are Federally Qualified Health Centers (UI Health, 2020). The board-certified emergency medicine physicians provide comprehensive medical services for adult and pediatric patients in emergency medical situations. The physicians have advanced skills and knowledge to perform emergency procedures, including trauma resuscitation, advanced cardiac life support, advanced airway management, and surgical procedures. The specialized emergency department nurses utilize the latest research to ensure patients receive appropriate testing, care, and education necessary during an emergency treatment (UI Health, 2020b). The UI Health Emergency Department has a 31-bed license, a fifty-seat newly renovated waiting area, and sees an average of 46,000 patients annually (UI Health, 2020a).

Problem of Practice

As stated by the UI Health Emergency Department's Interim Operations Director, *"We are not sure how effective our communication strategies were during the pandemic, and we want to explore how we can be more effective."* Ultimately, the UI Health leadership team needs to develop strategies that communicate new information to the staff so that same day changes can be initiated."

Because the care of a patient depends on knowledgeable providers, communication that provides practical and succinct direction is critical in crisis situations such as the COVID-19 pandemic. But creating effective and succinct messaging in the pandemic's early days was almost impossible for the UI Health Emergency Department leaders as information was in constant flux. They describe the first few months of the pandemic as lacking any sense of uniformity, constantly changing information and directives, with glaring differences in the day-

to-day instructions for healthcare providers. The constant change created abject fear in the staff as every day they came to work, they didn't know what to expect. Their uncertainty, coupled with the fear of being infected or infecting their families, created extreme stress and high anxiety levels.

One of the biggest challenges of coordinating crisis communication is developing and maintaining mutual knowledge, meaning all team members share a common ground and common understanding (Reddy et al., 2009). During the pandemic, creating a common ground and sharing information in a staff of over 110 employees rotating through shifts became more challenging than usual. Sending emails, one of the standard methods used in the past, became problematic as multiple messages were embedded in the text, and then part of the directive would be changed in a subsequent message. As a result, those staff members who had been off for as little as one or two days would no longer be sharing the common ground or common understanding.

Additionally, because of increasing workload and time-consuming processes such as donning and doffing personal protective equipment, staff members could not dedicate the time required at the beginning of their shift to scroll through large volumes of email to determine priority directives.

As a result of the new challenges, the UI Health Emergency Department leadership tried to adapt their communication approaches. They tried to utilize other methods of communication, such as the Intranet Tiles but found they could not keep the information current. They lacked the ability to manage the Tiles themselves, and the IT department did not have staff to respond to update requests in real-time. The consequence was significant delays resulting in the posting of out-of-date information. Another leadership adaptation was the commitment to attend each Unit Huddle. The medical director and nurse managers were present at the Unit Huddles every four hours to communicate new information, but the sheer volume of questions and discussion regarding the requirements of the day made Unit Huddles longer and longer. The Huddles were effective in communicating relevant information and new practices; however, the length of the sessions was unsustainable and began to interfere with patient care. So once again, the UI Health Emergency Department leadership needed to adapt their communication approach.

The UI Health Emergency Department's Interim Operations Director found easel paper in the staff break room and decided to create an information-sharing tool that augmented the Unit Huddles and provided a more permanent common frame of reference. The repositional paper, 25 by 30 inches, was posted strategically by the status board at the nurse's station, where it was accessible by all staff. The Message Board quickly became a locally controlled, hand-written, real-time, information-rich tool that directly impacted communication, workflow, and updated directives. The new tool supported the distribution of information and was able to build shared understanding quickly.   The Message Board also helped reduce circulating misinformation as it served as a point of reference and affirmation or confirmation of approved processes and procedures.

The Message Boards merged into the Unit Huddles and provided a concise presentation of operational, treatment, testing, and personal protective equipment changes or updates. The

Message Boards were used from March 20, 2020, until June 5, 2020. In total, the Interim Operations Director created 67 Message Boards with 659 message entries. Over half of the messages communicated a change from the day before, and many of the messages (46%) required an action or behavior change from the staff.

While the Message Boards seemed favorably viewed by the staff, it is unclear if this strategy or other strategies are more effective when UI Health Emergency Department leadership needs to communicate information that initiates same-day behavior change.

Research Questions

To explore and understand the Problem of Practice, a mixed-method study was developed. One study objective was to investigate what communication strategies were used in the UI Health Emergency Department during the COVID-19 pandemic. The second study objective was to determine the UI Health Emergency Department staff perceptions of the various strategies utilized. Data and findings were intended to inform members of the UI Health Emergency Department leadership team of staff perceptions, so improvement or modification opportunities may be identified.

Because effective communication is a driver of resilience, the final study objective was to assess the Emergency Department staff's resilience levels. Resilience capacity is vital to organizations as it enables them to cope effectively with unexpected events, adapt to changing conditions, bounce back from crises, and creates learning and success (Duchek, 2020). Understanding the components of resilience and the unit's strengths and weaknesses will provide leaders with targeted opportunities for communicating change in crises such as the COVID-19 pandemic.

To investigate the problem of practice, the following research questions were developed to drive the study design:

R1: How was information communicated to the UI Health Emergency Department Staff during the COVID-19 pandemic?
R2: What were the perceptions of the various communication strategies utilized during the COVID-19 pandemic:
R3: What is the level of resilience in the UI Health Emergency Department Staff?

Literature Review

In chaotic, highly volatile, and relentlessly uncertain times, organizations need to develop communication strategies that enable them to cope with unexpected events, bounce back, and even foster future success (Duchek, 2020). Urgent need for change creates anxiety and challenges for organizations as they struggle to design communication solutions that match the situation, new demands, or unfolding events. Successful organizations communicate through a

resiliency framework during times of stress or uncertainty, enabling them to remain fluid in their response to risk while embracing opportunities to learn (Veil, 2011). Resilience can be defined broadly and through different conceptual lenses. Resilient capacity is an integrated framework for organizations stressing evolvability, heightened sensitivity, and increased wisdom from post-event reflection and learning (Kantur & Iseri-Say, 2012). It describes how successful organizations anticipate, respond to, and are strengthened after uncertainty or crisis. More than just responding to events, resilience incorporates renewal, transformation, and dynamic creativity, relying heavily on effective and adaptive communication strategies (Lengnick-Hall et al., 2011). "Communication enables organizational resilience because it creates knowledge, builds trust, develops team cohesion, and network relationship" (Kantur & Iseri-Say, 2012, p. 767). Effective communication creates engagement and empowerment within an organization, crucial components in the complex response required when unexpected events or crises occur.

Resilience is a dynamic process requiring positive adaptations in the face of adversity and major stressors to prevent harm (Richards & Dixon, 2020). Resilience is also a complex process and continuum, often too narrowly defined. Resilience involves adapting, which generally involves the ability to bend but not break and bounce back in the face of adversity, trauma, tragedy, threats, or significant sources of stress (Southwick et al., 2014). The dynamic nature of resilience has been studied by researchers from diverse scientific fields, from ecology to genetics, for years, but there is no consensus on an operational definition. Pioneering psychologists and psychiatrists began to study the phenomenon of resilience in the 1970s when they found some children develop well, while others did not, in the face of risk or adversity (Masten, 2001). Some definitions consider resilience a personal trait, while others consider the contribution of systems in coping with adversity, while others define resilience more broadly in terms of environmental factors (Herrman et al., 2011). Ultimately, resilience is a phenomenon characterized by good outcomes despite serious threats (Masten, 2001).

Ecologists have also studied resilience but not at an individual level, as the psychologists and psychiatrists did, but rather at a system level. In ecology, the concept of resilience initially referred to the capacity of a system to recover its former shape after a disturbance (Annarelli & Nonino, 2016). But as with the social sciences, the field evolved. In 1973, an ecologist named C.S. Hollings introduced the topic of resilience linking ecosystems and environmental factors in his seminal paper. He asserts that resilience is the persistence of relationships within a system to absorb changes and still persist (Holling, 1973). His theory, now called Adaptive Management, emphasizes the need to keep options open and understand the future is unexpected and requires a shift of perspective to absorb and accommodate whatever form the events take (Holling, 1973). Hollangel takes Holling's research a step further by defining resilience in terms of the necessary adaptations to cope with complexity. He says resilience is an individual's, group's, or organization's ability to anticipate and change before the risk causes failure or harm (Annarelli & Nonino, 2016).

In the context of organizational resilience, additional factors, such as social hierarchies, relationship dynamics, the interaction of multiple parts of a system, and unit practices, must be considered. Organizational resilience refers to an organization's, not an individual's, ability to adapt to internal and external disturbances while maintaining its integrity as a system and the capacity to transform, learn, and innovate (Witmer & Sarmiento Mellinger, 2016). At an

organizational level, capacity for resilience requires cognitive, behavioral, and contextual capabilities (Lengnick-Hall et al., 2010). It also requires the system as a whole to respond productively to disruptions and risks for an extended time while reaching organizational aims effectively (Kantor & Iseri-Say, 2012).

The literature describes organizational resilience as an interactive and dynamic process. Various factors and system attributes contribute to organizational resilience, as do organizational processes. By understanding the capabilities and components required for resilient responses, an organization may more effectively respond to shifting external environmental risks while maintaining organizational integrity (Witmer & Mellinger, 2016).

Theoretical Framework

The frame used in this study focuses on organizational capabilities that create resilience and the conditions for their development (Duchek, 2020). This process-oriented model has several parts and does not merely look at resilience as an outcome but instead describes resilience as a dynamic, interrelated, and ongoing process. Duchek defines organizational resilience as "an organization's ability to anticipate potential threats, to cope effectively with adverse events, and to adapt to changing conditions" (Duchek, 2020, p. 220). These processes are fluid and intersect as people engage in the meaning-making of new information and the realities created by unexpected events or uncertainty (Buzzanell, 2018).

Anticipation, the first stage in the framework, describes preventative aspects, including an organization's ability to detect critical developments and potential threats by observing and identifying meaningful signals (Duchek, 2020). The environment surrounding organizations increasingly challenges organizations by posing threats that undermine stability and security, so consistent monitoring is critical for success (Annarelli & Nonino, 2016). Resilient organizations use internal and external information to monitor new and changing conditions that may present serious challenges and tax resources and abilities. The organization's ability to screen for signals and recognize potential threats is interlinked with its ability to feedback critical information to the appropriate authority in the system to minimize the disturbance or uncertainty (Burnard & Bharmra, 2011). Anticipation capabilities build the foundation for an effective response to critical situations as it enables organizations to prepare necessary resources in advance of the critical event (Duchek, 2020). Anticipation means organizations are not experiencing their environments passively but instead seek to continuously develop and apply new knowledge to their operating environment (Burnard & Bharmra, 2011). Furthermore, organizations that can identify impending crisis and risk can immediately initiate steps for self-protection (Sellnow et al., 2017). Finally, Sellnow and colleagues (2017) assert that developing anticipation skills can help an organization fill the void in sensemaking by creating opportunities to launch crisis communication to a workforce.

Coping, the second stage of the framework, is the process of designing and implementing positive adaptive behavior matched to the immediate situation while enduring minimal stress (Mallak, 1998). Coping starts with accepting reality and not downplaying an event or need to act. For it is only after acceptance that critical situations can be faced (Duchek, 2020). Hollnagel and colleagues are cited as defining coping as the ability to deal with the complexity of the real

world instead of breaking down or malfunctioning (Annarelli & Nonino, 2016). Resilient organizations accept reality and react quickly by making sense of the situation. The basic idea in sensemaking involves trying to understand a situation by using experience, reason, and rationalizing to develop a plan (Weick et al., 2005). Sensemaking is an essential element of resilience as it leads to action, and action leads to problem-solving (Duchek, 2020). Coping begins after a period of sensemaking and gives one a frame of reference for an event that allows for the creation of collective understanding (Dixon et al., 2017). Creating a collective understanding is the first step in helping to develop an organizational "new normal." A new normal involves constructing identity anchors that recognize the uncertainty of a situation and move it into the mundane or the regularities in life (Buzzanell, 2010). The periods of recognition, internalization, and activation are critical junctions in an organization's ability to adjust positively to an unexpected event (Burnard & Bharmra, 2011).

According to the framework, resilience also includes the ability to adapt to critical situations to help avoid or reduce the negative consequences of unexpected events (Duchek, 2020). At its simplest, resilience involves a change after a disruption in equilibrium (Holling, 1973). Adaptation incorporates an understanding of the emerging conditions and the ability to initiate transformative change to shape the future (Kantur & Iseri-Say, 2012). Adaptation is about recovery and the resumption of organizational activities. Adaptive capacity is displayed when an organization responds or bounces back using existing resources and capabilities or responds dynamically by developing new capabilities (Lee et al., 2013). Adaptation is a system's capacity of response to accommodate and mitigate environmental threats (Burnard & Bharmra, 2011). Adaption requires effective communication, flexibility, reflection, and learning. Reflection involves incorporating gained insight into the existing knowledge base by asking questions, seeking feedback, experimenting, reflecting, and discussing outcomes (Duchek, 2020). To be successful, organizations must have an open mind and a climate that encourages self-reflection. Adaptive capacity flourishes when an organization has an open mind and can continuously design and develop solutions that match or exceed their needs as changes emerge (Lee et al., 2013). Adaptation in a resilient organization requires accepting, exploiting, and integrating newly developed solutions and undergoing a transformation in response to unanticipated events that threaten an organization (Lengnick-Hall et al., 2011).

Methods

Participants

A set of three leaders from the UI Health Emergency Department were purposefully selected by the UI Health Emergency Department's Interim Operations Director to discuss their experiences during the COVID-19 pandemic. The leaders were selected based on their primary focus in the UI Health Emergency Department. The focus areas included: operational oversight, tactical oversight, and strategic oversight of the Emergency Department. A semi-structured, open-ended interview protocol was used as the basis for each interview.

Nursing staff, technicians, patient service associates, and managers were recruited from the UI Health Emergency Department to complete an online or paper version of the study's survey component. Eligible participants must have been working in the UI Health Emergency

Department since March 2020. Qualtrics, the survey software used, sent an anonymous email link to eligible department members identified by the Assistant Director, Patient Care Services, Emergency Department. For those uncomfortable or unable to complete an online survey, a paper version with identical questions was developed and distributed by the Assistant Director, Patient Care Services, to interested employees.

One hundred and ten (N=110) UI Health Emergency Department staff members were eligible for participation in the survey. Fifty-five employees completed the survey, resulting in a 50% response rate. Twenty-two participants completed the online survey, and thirty-three completed the paper survey.

Materials and Procedures

Data was collected from three sources to answer the outlined research questions. These three sources included: empathy interviews, message board analysis, and responses from a confidential online or paper-based survey. This three-pronged approach was intended to create a comprehensive inquiry system related to the problem of practice and allow for triangulation of results. The table below lists the research question and the corresponding data source:

Research Question	Data Collection
R1: How was information communicated to the UI Health Emergency Department Staff during the COVID-19 pandemic?	Empathy Interviews Message Board Analysis Survey
R2: What were the perceptions of the various communication strategies utilized during the COVID-19 pandemic?	Empathy Interviews Survey
R3: What is the level of resilience in the UI Health Emergency Department Staff?	Survey

Empathy Interviews

A semi-structured interview tool was created to gain departmental background, leadership perspective on communication strategies used, and perceptions of efficacy during the COVID -19 pandemic. It was also designed to encourage selected leaders to describe the pressures and unique challenges caused by the pandemic and distinguish this crisis from other periods of uncertainty. Empathy interviews are used to gather insights, generate definitions, understand, experiences, and feelings of others that may not otherwise be apparent (Birchall, 2018). The three leaders selected for the interviews were all considered influential pandemic managers with diverse organizational responsibilities, including strategy, tactical, and operational duties.

The UI Health Emergency Department Director was selected for the "strategy" focus in the interviews as she had responsibility not only for the overall operations and budget oversight of the ED but also for extensive external reporting, regulatory, and administrative duties. She

also worked closely with multiple business and informatics groups within the organization and the public health sector (Illinois Department of Public Health, Centers for Disease Control, Chicago Department of Public Health, and the Illinois Governor's office).

The UI Health Emergency Department's Interim Operations Director was selected as the "tactical" focus for the interviews as she had responsibility for the overall clinical operations in the ED. As a medical director, she was involved in multiple organizational work groups charged with distilling data into policies and practices. She worked with the medical staff, residents, partnered with the nursing leadership, kept senior leaders abreast of clinical changes and challenges, and drove the implementation of new testing and treatment practices as information became available. She offered consistent support to the clinical staff, worked 30 consecutive days at the onset of the pandemic, and was responsible for the development and daily updates of the Message Boards.

The UI Health Emergency Department Assistant Director, Patient Care Services, was selected as the "operations" focus as she had day-to-day responsibilities for managing the clinical staff (nurses, EMTs, and clerical support) in the ED. She created schedules, oversaw the erection and staffing of Camp Covid, the overflow tent installed to comply with infection control imperatives, and provided clinical support as needed. She was the "go-to" person for operational issues ranging from PPE allocation to ensuring testing complied with current recommendations. She worked 12 to 14-hour days and had personal contact with each staff member. She provided support, counseling and tried to manage the COVID-related challenges and the anxiety and fear experienced by every staff member as the pandemic escalated.

The average length of the three interviews conducted was 45 minutes. One interview was conducted in person, one via Zoom, and one via teleconference, in response to the participant's preference. Each interview began with reading the IRB-approved "information sheet" describing the study, potential risks and benefits, and seeking permission to record the interview, where appropriate. All participants gave verbal consent. With the exception of the in-person interview, each session was recorded with participant consent, so the accuracy of responses could be verified. The interview questions and participant information sheet can be found in Appendix A and B.

Once complete, the interviews were transcribed verbatim, reviewed, and clarified. The coding process was not linear and required several cycles and iterations to organize the data. As found in Saldana's (2015) coding manual, the first cycle of coding involved reviewing responses and sectioning under the relevant interview question, then moving to a grid so the three responses (strategy, tactical, and operations) could be reviewed side by side. The second cycle, found again in Saldana's (2015) coding manual, involved categorizing themes, tabulating, and identifying similarities and differences in responses. These processes segmented and organized data, preserving important characteristics of the phenomena they represent, including the relevance of role and perspectives (American Educational Research Association [AERA], 2006). It also helped to create a deep understanding of the data while giving a voice to the experiences of the participants. The coding process describes pertinent background information related to departmental functioning in the early days of the COVID-19 pandemic (Linneberg & Korsgaard, 2019). Finally, responses were summarized across the three organizational focus areas and

compared to the survey findings, with specific attention paid to citing similarities and differences.

Message Boards

To gather baseline information regarding communication topics and strategies, an analysis was performed on the sixty-seven Message Board pages used from March 24 to June 5, 2020, to communicate to the UI Health Emergency Department staff during the COVID-19 pandemic. Messages board pages were created on consecutive days, excluding the following dates: 4/19, 5/9, 5/10, 5/23, 5/24, 5/29, 5/30, 5/31, 6/1-6/4/2020. There were two pages with day consolidations on 5/2-3 and 5/15-16/2020.

The message boards were developed locally on large, 25 by 30-inch, repositionable white easel pad paper from Office Max found on the unit. The Interim Operations Director drafted daily updates and posted the pages in the emergency room nurses' station for staff to review before starting a shift and during unit huddles every 4 hours. After several days of use, the Interim Operations Director received positive feedback on the board's use, so she ordered colored markers to improve the board's look and accessibility. The new color-coding goal was to manage the visual space to simplify the cognitive tasks of reading, understanding, and taking action in a high-intensity, unpredictable crisis management situation.

All available staff meet at the nurse's station, "huddle" together, and receive real-time updates about operations, patient census, tracking, and general status reports. During the pandemic, a portion of the Unit Huddle was spent reviewing the daily message board's content, focusing on areas of change and required action. The Unit Huddle and Message Board were so strongly interconnected the meeting's name morphed into the "Board Huddle."

The messages on the 67 whiteboard pages were analyzed after transcription, coding, categorization, and classification. Each message was transcribed from the board and entered into an Excel spreadsheet. Pencil markings were added to the board pages as each message was transcribed to ensure the inclusion of all messages on the whiteboard. An independent review was conducted to ensure all messages were transcribed.

After the transcription, all messages were coded and categorized. As no theoretical approach was apparent, a process of inductive coding was used to develop phrases or terms found on the Message Boards. Induction, or grounded theory, is a logical model where patterns and categories are developed from actual observations (Babbie, 2017). The data then drive the development of the theory generation and categorization.

Categorization

The inductive approach used to categorize data is relevant when doing an exploratory study or when no theoretical concepts are immediately available to help describe the phenomenon being studied (Linneberg & Korsgaard, 2019). The data drive the development of relevant and meaningful categories. Working systematically produced a list of categories well

suited for analysis and interpretation, balancing having a workable number of codes and capturing the complexity and diversity in the data (Linneberg & Korsgaard, 2019).

Finally, a process of simultaneous coding was used to look for patterns characterized by similarity, difference, frequency, sequence, and causation (Saldana, 2015). This coding process transformed data into a standardized form more suitable for analysis (Babbie, 2017). The messages were categorized and included in one of the five following categories:

- Operational
- PPE
- Support
- Testing
- Treatment

Figure 1

Message Board Category and Sample
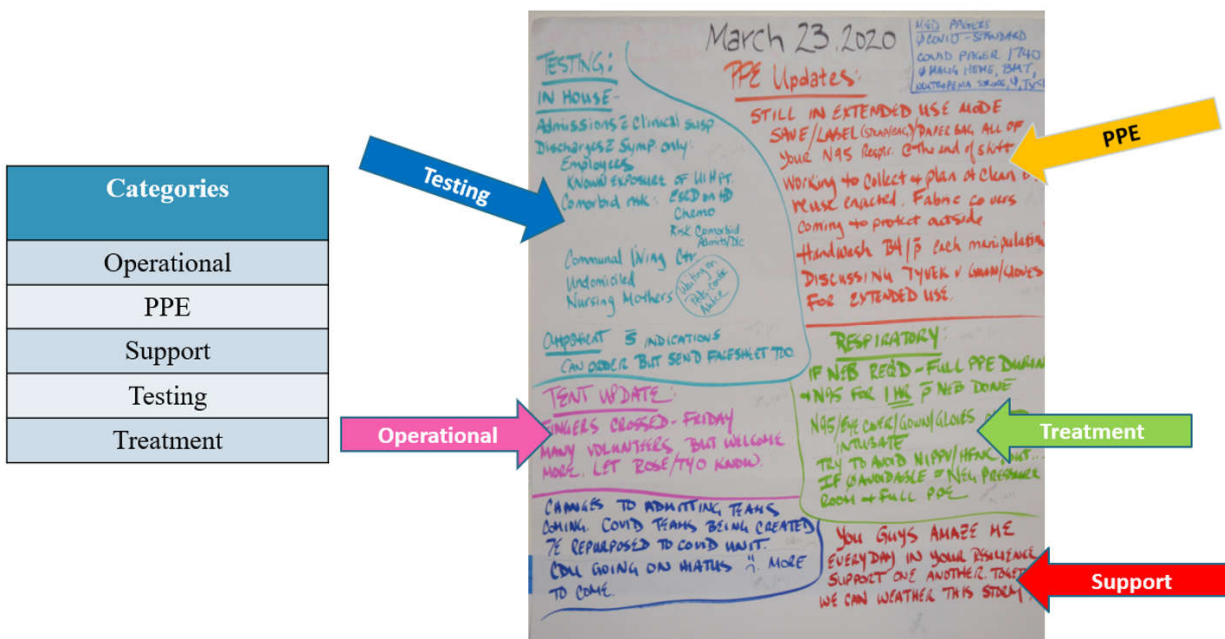
Change Status

After each message was categorized, a change status was assigned. Sequential messages were reviewed to determine if the board's message represented a change from the day before. Classifying the message as containing a change or representing stable information helps describe the type of communication presented to the UI Health Emergency Department staff. This status also quantifies the highly dynamic demands or behavior adjustments required of staff during the pandemic and determined whether the message was a reminder or a new directive. Coordinating

intra-disciplinary work in a fast-paced, dynamic environment is difficult, but coordinating multiple changes in operations and processes is critical to ensuring a common understanding of relevant information pertinent to the crisis response (Waring et al., 2018).   The change status is intended to illustrate the adjustments required in this unprecedented time of challenge and uncertainty. An independent reviewer verified the change status applied to each message. Concerns or disputes related to consistent coding were individually discussed and resolved by the author.

Action Index

Finally, each message was coded with an "Action Index" score. This scale was deliberately developed to identify a significant element in the data collected. It tells a story that helps answer a research question and creates a chain of evidence that supports interpretation and conclusions (Linneberg & Korsgaard, 2019). The "Action Index" scale describes the level and timing of action required or behavior change required as it relates to each message. Performance in uncertainty requires the ability of the system to adjust behaviors under complex and challenging circumstances (Son et al., 2019). Understanding how the board directed action or behavior change further characterized the content of the message board and provided insight into the requirements of the UI Health Emergency Department staff members related to adaptation and transformation requirements during the pandemic. An independent reviewer verified the consistency of the Action Index assignment applied to each message. Concerns or disputes related to coding were individually discussed and resolved by the author.

The table below describes the Action Index Scale, definitions for each level, action requirements, and an example from the message board.

Table 1

Action Index Legend

Action Index	Definition	Level of Action Required	Example
0	Informational	None	"Transport or screening notation, no changes from the previous day"
1	Resource (for patients or staff)	May need to use information	"Housing assistance number or psych patients will likely to go to a medical team until 8E is operational."
2	Informational with possible behavior change	Optional or possible action	"Advanced triage is almost done; tell Rose or Tyo if interested in signing up." "Fit test mandatory if using a new N95."
3	Change required-operational efficiency	Same day action required	Extended use P.P.E. instructions
4	Immediate change required-involving	Same day immediate action required	"If NIPPV/HFNC/Continuous Neb must be in negative pressure in full P.P.E."

	care of a patient or care of self		Screening and testing criteria changes or additions
5	Critical change required- emergency situation	Same day critical action required	Psychotic episode, infectious patient risking the well-being of others

Survey

The UI Health Emergency Department staff, including nurses, emergency medical technicians (EMTs), patient service associates (PSAs), and managers who had worked in the department since March 2020, were invited to complete a self-administered survey online or a paper-based copy. The survey included demographic items, questions intended to measure the communication methods available to members of the UI Health Emergency Department during the pandemic, and their perception of the communication strategies utilized. The survey also included an adapted set of questions from a validated tool to measure resilience. Dr. Larry Mallak, The Workforce Resilience Instrument (WRI) author, granted permission to utilize the WRI in this study on July 9, 2020.

Perception scales were used as a format to obtain unambiguous ordinality and intensity to a variety of responses related to preferences and experience (Babbie, 2017). The study intended to measure the perceptions of the communication strategies used by UI Health leaders during the pandemic. In addition to the staff perceptions, the survey's final set of questions focused on the staff's resilience levels. The WRI measures met standard psychometric parameters, showed internal consistency, or goodness of fit, and provided an empirical approach to measure active problem-solving, team efficacy, confident sense-making, and bricolage (Mallak & Yildiz, 2016).

The Four Factors of Workplace Resilience (Mallak, 2017) are detailed in the table below:

Table 2

Factor Definitions

Factor	Description
Active Problem-Solving	Taking action directed at a specific problem with the intention of resolving that problem.
Team Efficacy	How well an individual works as a team member to achieve an outcome. Anchored on self-efficacy and virtual role systems.
Confident Sense-Making	Comprises the ability to approach new situations confidently and to make sense out of chaotic situations.
Bricolage	Constructing solutions using only the resources immediately available.

The data obtained from benchmarking the four factors of workplace resilience is significant in this study; since communication is a driver of resilience, the results can be used to identify resilience strengths and weaknesses and drive strategies for improvement (Lee et al., 2013).

The survey was emailed to the list of staff provided by the Assistant Director, Patient Care Services via Qualtrics. A copy of the survey Information Sheet can be found in Appendix C. To ensure confidentiality, a branch question was created directing participants interested in joining the $100 Amazon gift card raffle to a separate survey requiring the submission of their email addresses. The survey was open for five weeks. After three weeks, only twenty-two participants (20% response rate) had completed a survey. Due to this low online response level, a paper-based survey was added to the collection methods in the final two weeks of the collection period. The UI Health Emergency Department Assistant Director, Patient Care Services, sent an email to all eligible staff indicating the availability of a paper-based survey. She distributed the surveys to interested participants and directed them to drop completed surveys in the confidential box provided for collection, as seen below. The final page of the survey included a removable section for participants to provide their email addresses if they wanted to be included in the Amazon gift card raffle. Surveys and email addresses were not connected in the drop box pictured below.

Figure 2

Confidential Drop Box for Paper-Based Surveys
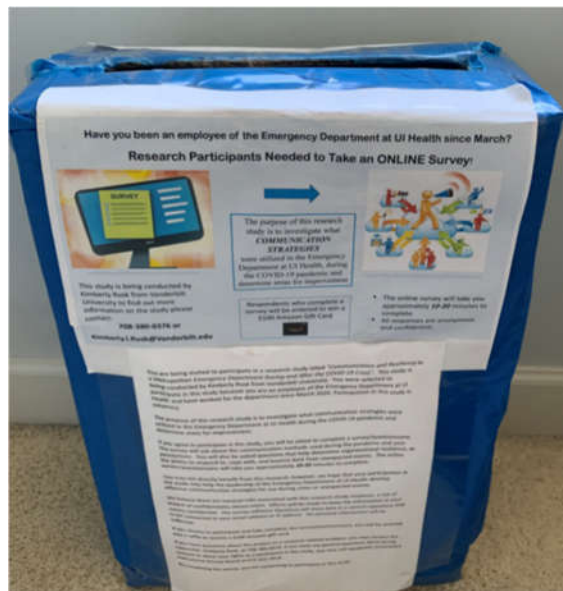
Findings

Empathy Interviews

The findings from the empathy interviews help answer the first and third research questions.

R1: How was information communicated to the UI Health Emergency Department Staff during the COVID-19 pandemic?
R2: What were the perceptions of the various communication strategies utilized during the COVID-19 pandemic?

All interviewees described the early days of the COVID-19 pandemic as filled with uncertainty, fear, and constant change. The tactical leader provided more detail to support the assertion, describing a lack of a uniformed message, constant change in the day-to-day messaging, making a "flip-flopping" of critical instructions apparent, a battle for access to PPE, which created an "uneasy tone" in the department, and critical messaging not reaching all the intended recipients. From the onset of the pandemic, all three leaders, despite having prior emergency and crisis experience, knew that standard procedures would not be effective in managing the new "extreme context" caused by the pandemic. An extreme context results from unique contingencies, constraints, and causations having the potential for physical, psychological, or material consequences of organization members (Hannah et al., 2009). Extreme context occurs when demand exceeds available resources and the ability to manage. Hannah (2019) states the consequences of an extreme context are thought unbearable and may exceed the organization's capacity to prevent those contexts from actually taking place.

The extreme context was created by tremendous uncertainty regarding testing, treatment, a flood of changing information, limited access to PPE, personal safety concerns, and space constraints, among other things. The early days of the pandemic were inundated with changes, and the emergency department workforce needed constant updates to stay abreast of the evolving information. The tactical leader recalled the sheer volume of questions asked by staff members and the "clamoring for a full almost dissertation description of what we are doing for the day" to ease fears and tension. She stated the huddles just got "longer, and longer, and longer, and longer," yet she felt she needed to answer questions and make sure the correct information was accessible.

Additionally, the leaders agreed there was no anticipating or preparing when the pandemic started. They were working from moment to moment, reacting first, learning from experience, and adjusting as they went along. For example, the operations and strategy leaders knew right away; their current space would not adequately protect staff and patients from infections patients. They worried about breakouts and large group exposures and knowing an influx would cripple the department. As a result, a new "cohorting" scheme was rapidly developed, and "Camp Covid" was built. Camp COVID was a freestanding outdoor tent connected to the Emergency Department, described by the operations leaders as having been "erected from where there was nothing" to provide support, overflow, and triage space for those presenting with COVID-19 symptoms. Under normal circumstances, building clinical space is

subject to stringent regulatory standards and must comply with layers of regulations. Despite some loosening of those regulations, immediately creating a new treatment space was a heroic interdisciplinary effort.

Figure 3

Images of Camp COVID
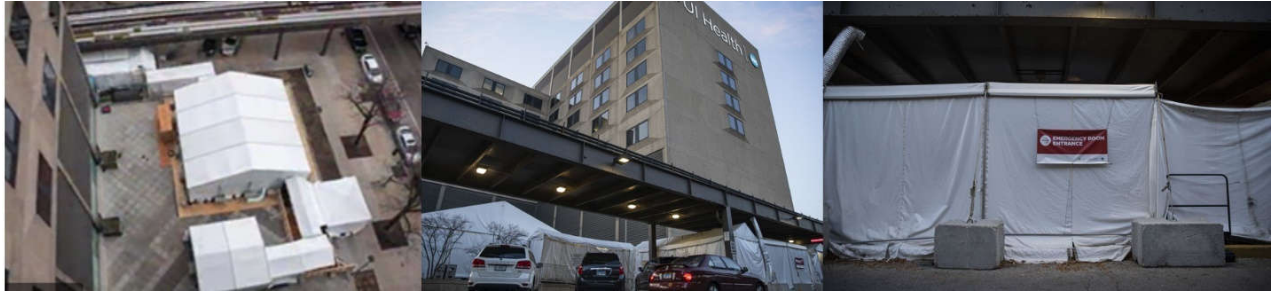
Critical information came from multiple internal and external sources, complicating the flow and distribution. For the most part, the leaders agreed that the internal group of experts, called Incident Command (IC), were the source of truth and expertise. Given her extensive reporting responsibility, the strategy leader adds Information Technology (IT) and Business Management to the list of expert sources of information. Each leader, depending on the organizational focus, received and processed information differently. An overview of information sources and flow are described below:

Figure 4

UI Health Information Flow During the COVID-19 Pandemic
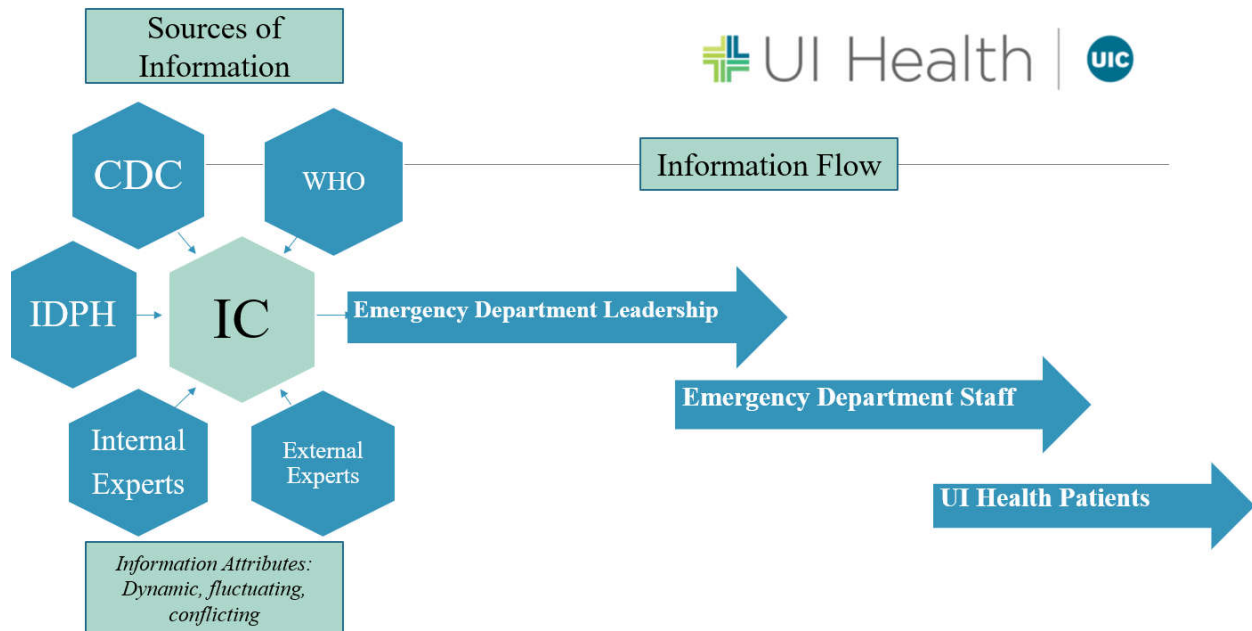
Depending on her role and responsibilities, each leader accessed information from distinct sources and communicated with diverse audiences, with different purposes depending on focus. They agreed that the spread of rumors and misinformation was a challenge to effective communication. While some information was wrong, the spread was not malicious. As stated by the operations leader, reading a three-day-old email meant huge gaps in critical testing, treatment, PPE, and operational information. Even with daily, or even hourly access, the information was dynamic, fluctuating, and conflicting, adding to the leadership challenges of creating effective communications.

Communication Strategies Used

Answering the first research question requires a clear distinction between the role and organizational focus for each leader interviewed.

Operations Leader

The operations leader focused her communication strategies on the management and day-to-day needs in the Emergency Department. She scheduled, supported, educated, and focused on unit-level details, implementation of orders in the department, and creating and maintaining a safe environment for all staff and patients.

Tactical Leader

The tactical leader had a wide-ranging focus, shouldering responsibility for unit-level operations, clinical oversight, and strategic planning. Her audience was broad, yet the communication requirements were specific and detailed. On a daily basis, she needed to communicate information to physicians, ensuring they knew about new testing, treatment, and order requirements. She needed to communicate with nurses regarding order implementation, testing, treatment, and procedure logistics. She coordinated interdisciplinary efforts and needed access to a variety of institutional leaders. She oversaw all operational details, from triage and assessment to the engagement of security and housekeeping for patient transportation and adherence to safety standards. She functioned as the "hub" in the department, crossing departmental and interdisciplinary lines. In the early days of the pandemic, the tactical leader worked 30 consecutive days to ensure lines of communication were established, adapted as needed, and used to transfer critical information to all of those involved effectively.

Strategy Leader

The strategy leader ensured the department's needs were met but primarily focused on institution-wide regulatory, compliance, and reporting requirements. She oversaw the reporting of over 100 data elements to internal and external sources. She struggled with what she called a "tug of war" between the CDC and the National Healthcare Safety Network as they worked through reporting requirements. She also worked with the organization's executive leadership, ensured compliance with creating a new practice setting (Camp COVID), and assisted in submitting federal grant applications through funding mechanisms such as the CARES Act.

In total, eleven forms of communication methods were identified. They include; email, unit huddle, face-to-face, staff meetings, employee rounding (managers or leadership walking the unit and talking to staff members), paper-based communication, message boards, employee intranet tile, text, phone conversations, and UIC Safe app.

The details of the communication methods available to each leader, the communication strategies used by each leader, along with their targeted audience, are found in the table below:

Table 3

Empathy Interview Summary

Leader	Communication Methods Available	Communication Strategies Used	Target Audience
OPERATIONS	• Email • Intranet Tile marked "COVID-19" • Message Boards • Huddles	➢ Email ➢ Message Boards ➢ Word of Mouth ➢ Walking Around and Clarifying, and Respectfully Redirecting (No, no, no!) ➢ Texting ➢ Rounding (Hourly)	All ED Staff: • Nurses • Techs • Clerks • Registration Staff
TACTICAL	• Multiple Working Groups-Internal • Incident Command • Blackboard • Daily Department Meetings • Newsletter Updates from C-Suite • Emails • COVID Response Emails • Face-to-Face • Mini "Teachings"	➢ Constant Dialogue ➢ Multiple Working Group Discussion ➢ Daily Department Meetings ➢ Formal and Informal Huddles ➢ Message Board ➢ Email ➢ EPIC	All ED Staff, Physicians, Ancillary and Inpatient Physicians and Staff: • Nurses • Techs • ED Physicians • Clerks • Registration Staff • Security • Housekeeping • Inpatient Physicians
STRATEGY	• Email • Message Board • Dashboards • Webinars	➢ Email ➢ Message Board	All ED Staff and House-Wide • IDPH/CPHD • Governor's Office • EM Resource

Communication Perceptions

While the leaders agreed on the need for effective and timely communication strategies, they differed in perceptions of the most effective and least effective methods.

Operations Leader

The operations leader believed communicating in Unit Huddles and with Message Boards were the most effective because it was easy to pass information. Additionally, she believed the staff preferred the huddles and message boards because they could ask questions and then use the boards as a reference. She reported, the huddles eventually became the "Board Huddle," effectively combining the two communication strategies. In her opinion, emails were the least effective; as she stated, "they don't always read it, and that was the worst."

Tactical Leader

The tactical leader also believed the Unit Huddles were an effective place to share communication. She stated they became more effective when the Message Board was integrated into the huddle because people could read it before the huddle and then use it as a point of reference. She believed they used the board for affirmation and confirmation, and it decreased the demands on her time because the staff knew what was happening. She said, "they began to wait for the boards," and then they'd go over and read through. When staff members were already working, they didn't have time to stop and log into a computer and search for an updated email, so she thought the high points and important numbers being posted were helpful.

Additionally, she included concise and repetitive information, like the health service and support numbers for employees. She believed searching in their packed email to find the reference numbers could cause unneeded and unwanted distress or frustration if someone was struggling. Finally, she said she started taping detailed grids and lists to the bottom of the message boards, saying, this is not changing until I tear it down. The grids included specifics for isolation requirements, or treatments you can and can't do in each room, and the process for complex procedures such as intubation.

She said email was the least effective because the young generation "don't email; it's not their primary mode of communication," and the older staff might not be as skilled in email. She said anytime you try to communicate electrically, it's a challenge. The second least effective strategy she said was using the Intranet Tiles. While the organization created a platform, there was an "inherent delay in getting it updated," so it was not useful. She believed the staff preferred face-to-face communication "because it offers the question-and-answer option."

Strategy Leader

The strategy leader believed the most effective communication was email, despite knowing not everyone reads all their emails. She said, "It can hit everybody. We have over 100 employees, 24/7, and some may work part-time, so that's the best way of communicating with everybody". She said the least effective strategy was the huddles. Although she sees the benefits, she said, "we only hit whoever is working at the moment," so important information may come out, but if you are not working or busy and unable to join the huddle, you may not hear the message delivered.

The strategy leader believes the staff prefers face-to-face communication because they can ask questions. In the near future, she said, the department will be hiring more managers who won't be in charge and won't have any patient assignment but will help run the unit, rounding on staff and patients throughout the shift. The problem now, she says, is "the night shift, they rarely see us."

A summary of the most and least effective communication strategies and leadership perception of preference is found below:

Table 4

UI Health Leadership Perception Summary

Leader	Most Effective Communication Strategies	Least Effective Communication Strategies	Leader Perception of Team Preference
OPERATIONS	• Message Boards • Huddles	• Email	• Huddles • Message Boards

TACTICAL	• Huddles-became more effective when the message board was integrated
	• System-wide communication
	• EPIC (chat function)
	• Zoom updates
	• Staff meetings
	• Information in uniform places so people can be directed to the site such as:
	    Email
	    Intranet
	    Bathroom Stalls
		• Email
		• Intranet tiles
			• Face-to-Face
			• Huddles
			• Message Boards

STRATEGY	• Email	• Huddles	• Face-to-face

Message Boards

As with the empathy interviews, the findings from the Message Board analysis help answer the first research question.

R1: How was information communicated to UI Health Emergency Department Staff during the recent COVID-19 pandemic?

As referenced in the empathy interviews, the tactical leader created message boards as a point of reference for the staff displaying important resources and pertinent information. The message board analysis illustrates the amount and dynamic nature of the information being communicated with the UI Health Emergency Department staff during the pandemic's early days. Over the 67 days analyzed, 659 messages were written on the board; 388, or 59%, represented a day-to-day change.

Categorization

The most significant number of messages on the boards are from the "Operational" category, representing 51% of the total messages. During the pandemic's early days, operational messages were critical as they informed, directed, and clarified daily activities. The second-largest category, or 21% of the total messages related to PPE, the changing needs, requirements, and supply levels within the organization. The following is a summary of the number and type of Message Board entries found:

Table 5

Message Board Summary

Total Number of Messages		
Message Category	Number of Messages	% of Total
Operational	336	51%
PPE	137	21%
Support	40	6%
Testing	99	15%
Treatment	47	7%
Total	659	100%

Change Status

More than half of the total, or 58%, of the messages on the message board represented a change from the day before, consistent with the empathy interviews describing a high level of uncertainty and challenges related to constant change and conflicting information. Of the day-to-day changes, the largest category comprises operational messages, followed by messages related to PPE. The following is a summary of the number and category of messages with no change and those changing from the previous day:

Table 6

Message Board Change Summary

Day to Day Change by Message Category					
Day to Day Change by Message Category	No Change		Day to Day Change		
Operational	120	44%	216	56%	
PPE	57	42%	80	58%	
Support	37	93%	3	7%	
Testing	42	42%	57	58%	
Treatment	14	30%	32	70%	
	270	41%	388	59%	

Action Index

The Action Index informs the inquiry by describing the type of message analyzed and the required action the Message Board communicated by defining the required behavioral or operational changes of those receiving the communication contained in each message.

Table 6

Required Level of Action Definition

Action Index	Level of Action Required
0	None
1	May need to use information
2	Optional or possible action
3	Same day action required
4	Same day IMMEDIATE action required
5	Same day CRITICAL action required

While 46% of the messages did not require action (Level 0 = no action required), there were a significant number of messages requiring optional change (25%), same-day change (14%), or immediate same-day change (7%), once again demonstrating the critical and dynamic nature of the information communicated in the early days of the pandemic. Particularly striking

is that 21% of the messages analyzed required same-day, or more importantly, *immediate* same-day action to care for patients or themselves.

Figure 5

Action Index Level Summary

Action Index by Level

	Level 4	Level 3	Level 2	Level 1	Level 0
Operational	0	24	73	31	208
PPE	16	38	48	0	35
Support	0	0	0	0	40
Testing	23	25	23	0	28
Treatment	10	7	18	2	12
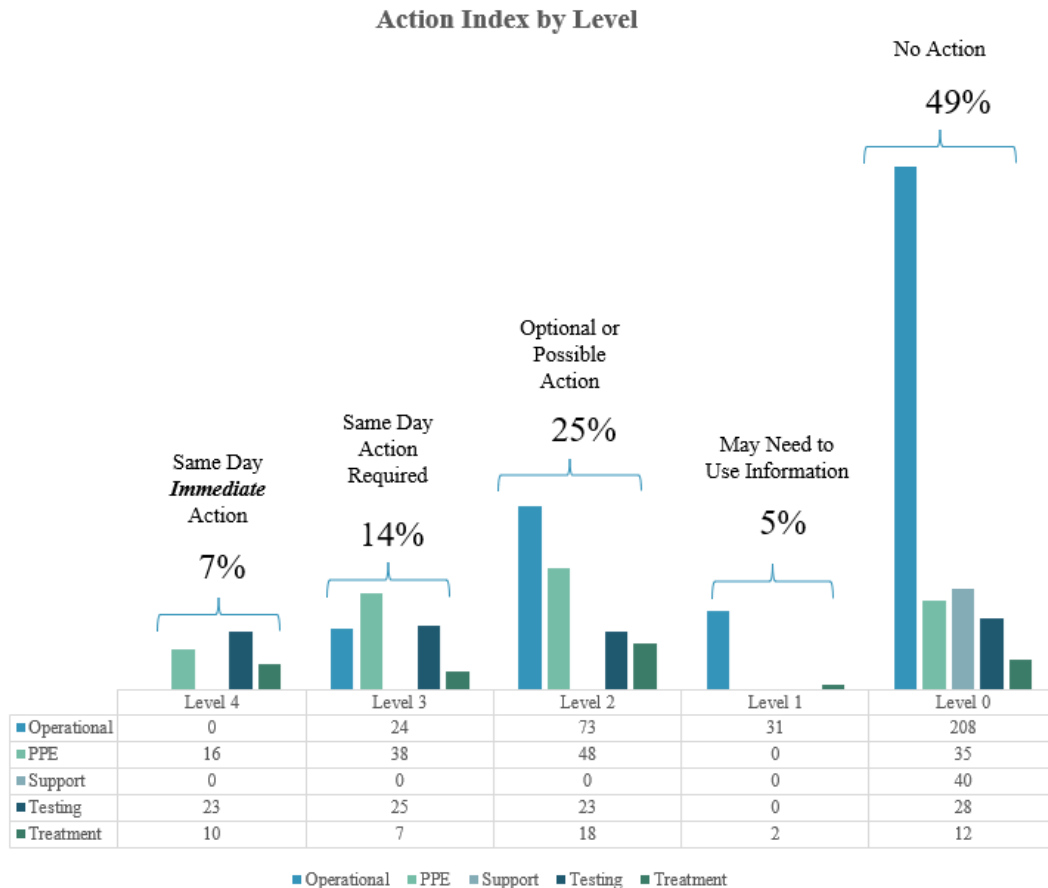
A complete summary of the Message Board findings may be found in Appendix D.

Survey

The findings from the online and paper-based survey help answer research questions 1, 2, and 3.

R1:   How was information communicated to UI Health Emergency Department Staff during the recent COVID-19 pandemic?
R2: What were the perceptions of the various communication strategies utilized during the COVID-19 pandemic in the UI Health Emergency Department Staff?
R3: What is the level of resilience in the UI Health Emergency Department Staff?

Fifty-five participants, or 50% of the UI Health Emergency Department staff (N = 110), completed the survey. More than half of the respondents were nurses (64%), and more than half were those relatively new to the unit (under five years in the UI Health Emergency Department). Detailed response rates and demographics are found in the table below.

Table 6

Survey Demographic Summary

Distribution Channel			Role in the Emergency Department:			Number of years worked in the UI Health Emergency Department:		
			Nurse	35	64%	Under 5 years	32	58%
Email	22	40%	EMT	7	13%	6-10 years	7	13%
			PSA	3	5%	11-15 years	8	15%
Paper	33	60%	Physician	0	0%	16-20 years	4	7%
			Other	10	18%	More than 20 years	4	7%
n =	55		n =	55		n =	55	

Survey results indicate that the UI Health Emergency Department staff learned or accessed eleven different sources during the pandemic. More than half of the respondents cited email, unit huddles, face-to-face staff meetings, or the use of the intranet tiles as sources of information. The average response cited access to 4.67 methods. The staff also cited eleven communication methods used by the UI Health Emergency Department leadership to communicate during the pandemic. More than half of the respondents cited email, unit huddle, and face-to-face methods. While the most cited methods differed slightly in response rate from "all methods available," the staff reported the UI Health Leadership used all methods of communication that were available during the pandemic. The average response cited access to 4.23 methods or less than 0.5 fewer than the cited methods as available. The top four methods

staff cited by staff are consistent with the methods used by UI Health leadership.   Details may be found in the table below:

Table 7

Available and Utilized Communication Method Summary

How did you learn, or access, information related to your position/job function during the COVID pandemic? (select all that apply)			What communication methods were used by the UI Health emergency department leadership team during the pandemic? (select all that apply)		
Email	53	96%	Email	52	95%
Unit Huddle	45	82%	Unit Huddle	44	80%
Face-to-Face	33	60%	Face-to-Face	28	51%
Staff Meeting	27	49%	Staff Meeting	23	42%
Employee Intranet Tiles	27	49%	Employee Rounding	20	36%
Employee Rounding	21	38%	Paper-Based Communication	19	35%
Paper-Based Communication	17	31%	Message Board	18	33%
Message Board	17	31%	Employee Intranet Tiles	17	31%
Phone Conversation	10	18%	Text	7	13%
Text	4	7%	Phone Conversation	3	5%
UIC Safe App	3	5%	UIC Safe App	2	4%
n =	55		n =	55	
total responeses	257		total responses	233	
Average Methods	4.7		Average Methods	4.2	

The next set of survey findings addresses research question number 3 and perhaps represents some of the study's most important findings. These questions illustrate the UI Health Emergency Department staff perceptions of the most effective communication strategies used during the pandemic and how staff members would like to receive information going forward. The majority of the respondents selected unit huddle (78%), email (76%), and face-to-face (55%) as the most effective strategies during the pandemic. These findings are consistent with the staff perceptions of UI Health leadership methods found in an earlier survey question. While respondents identified an average of 4.67 methods available and 4.24 methods used by leadership, they believed that only an average of 3.25 methods were perceived as most effective during the pandemic. Consistent with their view of the most effective methods, staff members would like to receive information going forward via email, unit huddle, and face-to-faces, with only a small amount of variability in response. Details from these survey questions may be found in Appendix E.

The participants were then asked about perceptions of communication strategies used at different time points, before their scheduled shift, and during their shift. This was followed by two questions that asked for perceptions of communication methods used to convey "critical" information before their scheduled shift and during their shift. The unit huddle is the most commonly perceived effective method for all the questions and time points, excluding conveying critical information during a shift, when half of the respondents choose face-to-face as the most effective. While respondents could choose all methods that apply, most chose only one to two methods as the most effective; the average respondent selections ranged from 1.35-1.69 methods. Details may be found in Appendix E.

The following set of survey findings analyzes responses using a Likert scale to describe the UI Health Emergency Department staff's perceptions. The participants demonstrated confidence knowing who was in charge (often true-25%, true nearly all the time-53%) during the pandemic, and only slightly less confidence in knowing who had expertise (often true-38%, true nearly all the time 22%). During the pandemic, 47% of respondents felt well informed, often or nearly all the time. Finally, 29% of respondents stated they were either not or rarely confused by the communication received; however, a concerning number, 62% of the respondents, were confused either sometimes, often, or all the time by the communication received. Details can be found in the table below:

Table 8

Level of Confusion Reported by Staff

During the pandemic, I was confused by the communication I received.		
1 = Not true at all	11	20%
2 = Rarely true	5	9%
3 = Sometimes true	18	33%
4 = Often true	16	29%
5 = True nearly all the time	5	9%
n =	55	

Using questions adapted from the validated WRI, the following responses help answer research question 2 regarding levels of staff resilience. The WRI represents four factors: Active Problem Solving, Team Efficacy, Confident Sense-Marking, and Bricolage. Questions were grouped, per the instrument directions, summed, and averaged to report levels of each factor of staff resilience. The UI Health Emergency Department staff demonstrate above average (range 3.96-4.13) resilience levels in each of the four categories described. The highest average is found in the factor questions related to Confident Sense-Making (4.13 average score). "Confident Sense-Making is the ability to approach new situations confidently and to make sense out of chaotic situations" (Mallak, 2017, p. 2). The second highest factor score was Team Efficacy (4.03 average score). "Team Efficacy refers to how well an individual works as a team member to achieve an outcome" (Mallak, 2017, p. 2). Both of these categories of resilience demonstrated consistent responses of "often true" or "true nearly all the time."

A two-tail t-test repeated-measure ANOVA was performed to assess statistical significance; the calculations demonstrate no difference between the reported averages, *df(3,51)=0.849(3), p =0.47*. A detailed summary of the findings is shown below:

Figure 7

Resilience Summary

Average Resilience Score
Four Factor Workplace Resilience Instrument

Likert Scale:
1 = Not true at all
2 = Rarely true
3 = Sometimes true
4 = Often true
5 = True nearly all the time

ActiveProblem Solving	Team Efficacy	Confident Sense-Making	Bricolage
218.33	221.50	227.00	217.25
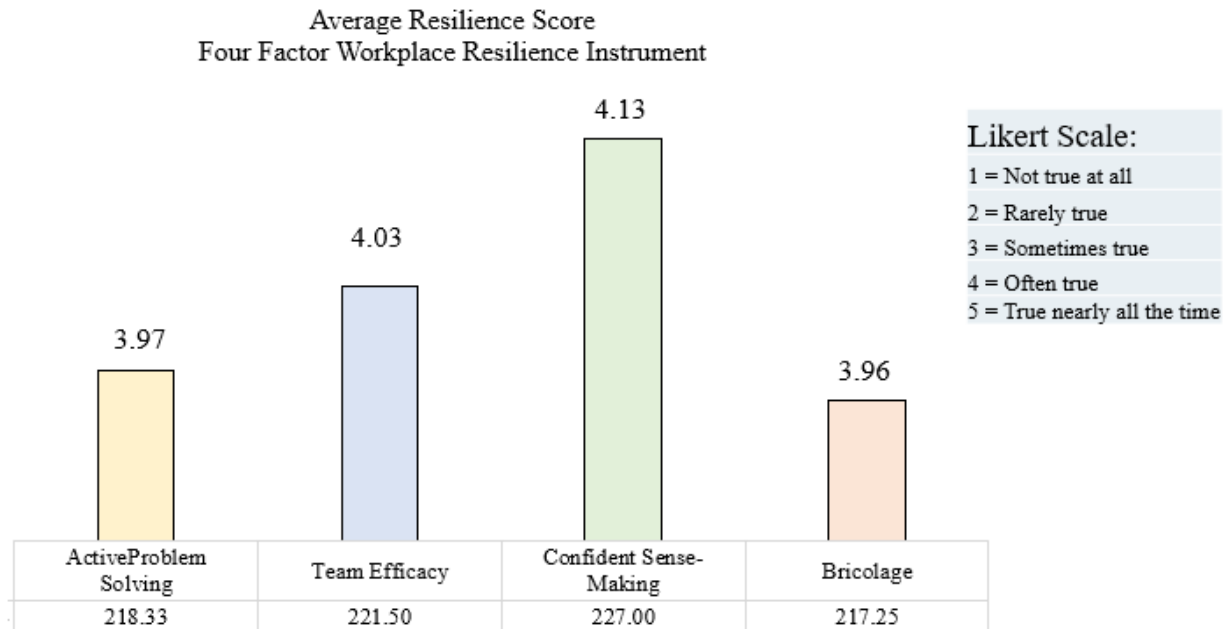
Discussion

The UI Health Emergency Department leadership used many existing and newly created communication methods to anticipate, cope with, and adapt to the evolving COVID-19 pandemic, consistent with an integrated resilience framework. The leaders were cognizant of their responsibility to create and transmit messages to intended receivers that stimulated shared understanding and created shared awareness and direction in the confusion and uncertainty caused by the pandemic (Ruben & Gigliotti, 2016). Information sharing was effectively facilitated by adopting strategies that created familiarity and lowered the cognitive burden of trying to make sense of a chaotic situation. The role of information-rich, common artifacts, such as a message board, was used to simplify cognitive activities and tasks such as making choices, detecting problems, and solving problems (Xiao et al., 2007). Using a common frame of reference and creating understanding through a shared language and relevant experiences facilitated communication and the coordination of critical activities (Wears et al., 2007). UI Health leaders also used Face-to-Face communication mechanisms such as Unit Huddles and Rounding to reach staff and engage in two-way communication, answering questions, providing support while directing, and prioritizing activities. These combined methods were intended to build trust and guide the staff through changing and challenging circumstances.

Key Findings

R1: How was information communicated to UI Health Emergency Department staff during the COVID-19 pandemic?

1. UI Health Emergency Department staff reported eleven different methods of communication available and used by the UI Health Emergency Department leadership during the COVID-19 pandemic. The top 4 methods include; Email, Unit Huddle, Face-to-Face, and Staff Meeting.

2. The Message Boards used during the COVID-19 pandemic contained 659 messages (67 days of analysis) in the following categories: 51% Operational, 21% PPE, 6% Support, 15% Testing, and 7% Treatment. 59% of the information changed from the previous day's Board. 49% of the messages were informational only, 25% required a possible behavior change, 14% required same-day action, and 7% required same-day, immediate action.

R2: What were the UI Health Emergency Department staff perceptions of the various communication strategies during the COVID-19?

1. The UI Health Emergency Department staff reported the most effective methods of communication as Unit Huddle, Email, and Face-to-Face.

2. UI Health Emergency Department staff would like to receive information in the future via Unit Huddle, Email, and Face-to-Face methods.

3. During the pandemic, UI Health Emergency Department staff knew who was in charge, 78% of the time (53% "nearly all the time," 25% "often"), and knew who had expertise, 60% of the time (22% "nearly all the time," 38% "often").

4. During the pandemic, **less than half** of the UI Health Emergency Department staff, 47%, felt well informed (16% "nearly all the time," 31% "often").

5. During the pandemic, **an alarming 71%** of the UI Health Emergency Department staff were confused by the communication they received (9% confused nearly all the time, 29% often confused, 33% sometimes confused).

6. The UI Health Emergency Department staff cited Unit Huddle as the most helpful communication method when adaptations or changes were required BEFORE starting the shift, during the shift, and when CRITICAL information is needed before the shift.

7. The UI Health Emergency Department staff cited Face-to-Face communication as most helpful when CRITICAL information was needed DURING their shift.

R3: What is the level of resilience in the UI Health Emergency Department staff?

1. The level of resilience in the UI Health Emergency Department staff is higher than average in all four workplace resilience factor categories based on a 5-point Likert scale. Confident Sense-Making scored highest (4.13), followed by Team Efficacy (4.03), Active Problem-Solving (3.97), and Bricolage (3.96).

Communication Successes and Staff Perceptions

Information was communicated on multiple electronic platforms, through paper-based methods, and through a variety of face-to-face or personal methods.

Survey respondents answered the first research question by citing the following methods used to communicate;

1. Email
2. Unit Huddle
3. Face-to-Face
4. Staff Meeting
5. Employee rounding
6. Paper-Based Communication
7. Message Board
8. Employee Intranet Tile
9. Text
10. Phone Conversation
11. UIC Safe App

Both UI Health Emergency Department staff and leaders agree that a combination of approaches, such as email and unit huddle, email, and face-to-face, were the most effective ways to communicate during the pandemic. Moving forward, a majority of survey respondents would like to receive communication via email (75%) and Unit Huddle (73%). These responses support the approaches used by unit leaders and confirm leadership perceptions of the most effective strategies or methods. Perceptions are important for organizations to identify as they recognize strengths, weaknesses, and vulnerabilities so possible internal and external efforts and strategies for communication can complement the limitations (Kantur & Iseri-Say, 2012)

The integration of the Message Boards into the Unit Huddle was a particularly useful strategy for the department. The staff ranked Unit Huddle as one of the most effective strategies used and the second-highest preference for receiving communication moving forward. In the empathy interview, the operational leader shared how the Unit Huddle morphed into the "Board Huddle." The tactical leader shared how a portion of each huddle was allocated to the Message Board review. The Message Boards created an expressive, shared visual representation of information while reducing personal communication needs (Xiao et al., 2007). Developed locally through a process of bricolage, the Message Boards are consistent with the six properties outlined by Wears et al. that describe the usefulness of boards (2007). The Message Boards were

malleable or easy to evolve and could be reconfigured and continually updated with little effort. They were *ecological* and could persist or changes as needed, and when no longer needed, the board could be dropped. They were *owned* or locally controlled and contained unit-specific and meaningful information that was not internally or externally regulated. They were *widely available* and helped coordinate the multiple groups involved in department functions, with changing membership, 24 hours a day, seven days a week, as they were posted in a common area of the unit. They were *informal*, hand-written in colored markers by the leadership team. Finally, they were *accessible* and required no particular skill or equipment (except for the paper) to create. The Message Boards provided consistent, reliable, low-cost, meaningful information, constrained only by the physical characteristics of the board itself (Wears et al., 2007).

The Message Boards and frequent use of Email facilitated a shared meaning of the rapidly unfolding events and new realities. During this unprecedented and chaotic disruption, the leaders knew they must frame the situation in a way that developed a shared reality while building trust, confidence, and hope (Ruben & Gigliotti, 2016). The Message Boards and Email also allowed staff to process information quickly, effectively, and mindfully, consistent with the unit strength, high scoring, Workplace Resilience Factor of "Confident Sense-Making" (Mallak, 2017). As Confident Sense-Makers, (average score 4.13, on a 5-point Likert scale), the Message Board and Email, to some extent, created a communication strategy that encouraged staff to use their skills to make sense out of a chaotic situation. Confident Sense-Makers can reliably interpret information in the face of crisis, meet the multiple demands of a situation, and move toward a desired action or behavioral outcome (Mallak, 2017).

Inconsistencies and Concerns

Many of the approaches utilized throughout the pandemic were familiar to staff members. They shared the Message Board's valuable attributes, including using a common platform or artifact, incorporating shared language to reference challenges or problems, and effectively reduced cognitive demand and process requirements needed to facilitate understanding and action. While many communication strengths were identified during the study, several inconsistencies and concerns merit discussion.

First, despite selecting Unit Huddle as the most effective form of communication, the respondents choose Email as their preferred method of communication moving forward. UI Health leaders would benefit from understanding the staff's perception and desires in more detail. Gaining a deeper understanding may require additional efforts by the UI Health leaders. For example, focused conversations with staff members during Rounds or Face-to-Face meetings that encourage sharing of preferences and rationale may uncover helpful information that the leaders may find useful when developing future communication strategies

Next, 37% of respondents reported knowing who was in charge, sometimes, rarely, or not at all. Additionally, 40% of respondents stated they only sometimes or rarely knew who had expertise during the pandemic. As crisis communication involves more than merely disseminating information, clearly defined and articulated roles and responsibilities are required to ensure all team members have confidence and trust in the information they receive. Building a solid foundation of trust helps with the most important element in crisis communication; the

willingness of staff members to make behavior changes requested by those in charge (Sellnow et al., 2017).

Despite using many methods of communication, 53% of the staff reported they did not feel well informed. Only 33% felt well informed some of the time, 11% rarely felt well informed, and 9% of the staff reported not feeling well informed at any time.

Finally, due to the complex, fluid, and conflicting nature of the information seen in the early days of the pandemic, 71% of the respondents reported feeling confused sometimes, often, or nearly all the time. Decision-makers and organizational leaders have access to relevant information and must decide on strategic distribution so staff members are not confused. They must also work to follow up with staff members to determine levels of understanding and identify gaps in knowledge. Determining how the recipients perceive the communication should be embedded in all strategies. Effective communication must be an integrated, bidirectional, and ongoing process throughout a crisis or period of uncertainty (Seeger, 2006).

Resilience Levels and Room for Improvement

While the results of the WRI provide insight into specific strengths in UI Health Emergency Department staff, it has limitations. It is a simplified or targeted representation of resilience that may lead to a common knowledge base useful for improving work practices, as seen in this case. Measuring and targeting the four factors of workplace resilience helps leaders create and facilitate communication strategies focused on performance adjustments, but it may not provide insight into the broader conceptual framework of resilience. As described in the Theoretical Context section above, resilience is a broad term with many factors and components. Ultimately resilience allows an organization the capacity to bounce back after an unexpected event with renewed focus or strength to meet future demands (Son et al., 2019). While individual resilience is considered an essential part of organizational resilience, the whole system must work together to make meaning of a new or altered reality and create or improvise solutions to survive (Kantur & Iseri-Say, 2012).

The integrated framework of organizational resilience that grounds this study describes active and purposeful capabilities rather than singular strategies or processes. This integration describes capacities to anticipate, cope with, and adapt to unexpected events and crises (Duchek, 2020). This framework represents the dynamic nature of resilience and offers insight into how it is achieved in practice. Using data from the online and paper-based survey, we can see how individuals, strategies, and processes were integrated to support the unit, helping the staff members not only survive but bounce back stronger from the chaos created by the COVID-19 pandemic.

The schematic below describes Duchek's (2020) integrated capability-based conceptualization of resilience along with the actions required for successful communication in each stage of a crisis. The schematic illustrates the interconnections in the key strategies, steps, processes, and methodologies employed by UI Health Emergency Department staff and leadership that allows survival and successful adaptations to build future success.

Communication and Resilience

Anticipation	Coping	Adaptation
Learning for crisis	*Learning as crisis*	*Learning from crisis*

COVID-19

Sense-breaking → Reaction/Building New Reality → Action/Transformation

UI Health Emergency Department Response and Approach

- Information Gathering: from
  - Internal and External Sources
- Communication Strategies:
  - Electronic Platforms
  - Paper-based Communication
  - Face-to-Face/Personal

- Constant Dialogue
  - Multiple Working Group Discussion
  - Daily Department Meetings
  - Formal and Informal Huddles
- Message Board
- Message Board/Huddle Integration
- Email
- Support Opportunities

- Cohort Redesign
  - Protection of Patients
- PPE Adjustments/Allocation/Tracking
  - Protection of Self
- Camp COVID
- Treatment & Testing Adjustments
- Operational, Safety, Transportation
- Registration Procedures
  - iPad Integration

Adapted from: Organizational resilience: a capability-based conceptualization Stephanie Duchek, Business Research (2020)

While the Four Factor Workplace Resilience scores are commendable and demonstrate a high level of resilience competence, there is still room for improvement. As resilience incorporates improvisation, agility, and dynamic creativity from the inside out, the lowest scores found in "Active Problem Solving" and "Bricolage" may hinder effective crisis responses (Lengnick-Hall et al., 2011). Developing and implementing novel combinations in the organization's communication and response-ability repertoires creates the capacity to solve problems in uncertainty (Duchek, 2019). Bricolage, for example, involves manufacturing adaptations and alternative solutions using only available resources in a stressed and resource-scarce environment. For staff members to feel comfortable taking risks to seek out and create novel solutions, the organization must be culturally "safe" with a solid foundation of trust, employee empowerment, and engagement. UI Health leaders can begin to understand how the staff feels about taking risks and improvising solutions during Face-to-Face communication sessions or while Rounding on the unit.

Recommendations

Communication can have different aims, message strategies, objective or behavioral responses, and target audiences (Leykin et al., 2016). There is no single strategy for communicating change; however, the following list of evidence-based best practices and opportunities for integrated processes will help deliver messages to the UI Health Emergency Department staff during times of uncertainty or crisis, like the COVID-19 pandemic. Many of the strategies are grounded in research related to risk and crisis communication. Continuous and effective communication creates knowledge and builds trust that persists in chaotic and uncertain times, allowing the organization to not only survive but bounce back stronger (Kantur & Iseri-Say, 2012).

1. **Integrate Communication Best Practices into all Methods and Approaches**

Information sharing is facilitated by familiarity and having a common understanding of problems and interpretation of relevant information (Waring et al., 2018). Effective communication must be an integrated and ongoing process and help create situational awareness. It must also be understood, believed, and personalized. Learning outcomes are based not only on cognitive learning but also on perceived value and relevance, so leaders must focus on building trust and credibility before and during a crisis (Seeger, 2006, Sellnow et al., 2017). Therefore, communication should be honest and transparent, even when information is not certain or is evolving. Sellnow et al. (2017) found that communication involves more than disseminating information. Recipients must be able to act on the information, so they recommend the following:

Communication must be:
- Honest
- Credible
- Personalized
- Relevant and focused
- Logical explanations
- Clear priorities
- Actionable
- Describe indented behavior outcome
- Provide practical instructions

The critical outcome in communicating during times of uncertainty is behavioral. Leaders need to communicate change and direct their units on actions that will protect themselves and their patients. Communicating practical, honest, and actionable instructions builds confidence and creates a willingness to act and comply (Sellnow et al., 2017). These best practices will be effective in each of the conceptualized stages of resilience outlined above, anticipation, coping, and adapting.

UI Health leaders can begin with being open and candid in their communications to build credibility and trust. By acknowledging uncertainty but clearly outlining what is currently know, employees can balance the defined uncertainty while establishing a sense of control generated from what is known. For example, when the COVID-19 testing standards changed on an hourly and daily basis, the UI Health leaders should acknowledge the change. By recognizing the frustration and confusion and clearly detailing the current procedures and the underlying rationale, they remind staff members that they are experiencing unprecedented times together. Commit to sharing the updates as they become available, close the communication with the action required and contact information for follow-up. UI Health leaders must then be available for questions and support as the staff deals with new norms and tries to adapt to new and changing requirements.

2. **Utilize a Permanent Message Board to Reduce Cognitive Workload and Leverage Resilience Strengths**

Consider purchasing a permanent White Board to continue with success gained from using the paper-based Message Board in the early days of the COVID-19 pandemic. Artifacts, such as paper-based Message Boards or wall-mounted White Boards, developed by frontline users, serve as a general cognitive, communication, and coordination tool (Wears et al., 2007). When change is constant, unpredictable, and full of uncertainly, a whiteboard posted in a strategic location, such as the nurses' station or next to patient tracking boards, can effectively, inexpensively, and with modest resource expenditures, reach a large number of unit personnel. The theoretical model of distributed cognition suggests the role of familiar artifacts reduces cognitive demands by simplifying tasks and tailoring tools to support communication through shared visual representation (Xiao et al., 2007). Wears et al. (2007) outline six properties' that contribute to a communication strategy's usefulness, including; malleability, ecological, locally owned, widely available, informal, and accessible.

The use of a wall-mounted White Board will also leverage resilience strengths identified in the WRI survey tool. As described above, the UI Health Emergency Department staff demonstrate above average (4.13 on a 5-point Likert scale) Confident Sense-Making skills. Confident Sense-Makers use sense-making and mindfulness to interpret information, as found on a Message Board, for example, in a confident manner. Confident Sense-Making is a crucial factor of resilience as it allows for the interpretation of information, rapid decision making, and taking action in all the conceptualized stages of resilience (Mallak, 2017).

3. Understand the Audience

While Rounding, in the Unit Huddle, Staff Meetings, or while utilizing other Face-to-Face communication approaches, seek to understand staff perceptions, expectations, and preferences. Despite using multiple communication methods, less than half (47%) of UI Health Emergency Department staff felt well informed. Understanding perceptions and spending time on self-reflection are critical activities given the survey findings. Self-reflection is a key driver in resilience, as it allows organizations to incorporate insights learned into practice (Duchek, 2020).

Engagement with staff also helps translate intended strategies into effective outcomes. Creating a safe and supportive environment fosters communication and makes organizations better equipped to cope with threats and changing circumstances (Kantur & Iseri-Say, 2012). By creating an open and honest culture, leaders are offered perspective into values held by staff members that generate opportunities to develop personalized, relevant messages that instill confidence and a willingness to change, even if the change requires following a dramatically different course of action from the norm (Lengnick-Hall et al., 2011).

One possibility to better understand the audience is for the UI Health leaders to develop a checklist or survey to use while Rounding. The tool could focus on targeted communication strategies used in the past day or two with questions designed to determine staff perceptions and levels of understanding. For ease of use, an integrated 1–10-point scale can be used to measure understanding along with a set of open-ended questions inquiring about how the staff member would like to see improvements or clarifications on the topic. Then, every week, or more or less often depending on communication needs, the UI Health leaders can discuss the responses and suggestions. If the Face-to-Face survey yields only positive findings, or if staff members seem

reluctant to answer, then a confidential survey can be emailed as needed using a Google Doc or simple Qualtrics form; both are free of charge. Repeatedly engaging the staff members in discussion, empowering them to detail their needs and desires helps build trust and credibility (consistent with Recommendation #1) and may offer helpful suggestions for designing future communication strategies.

4. Leverage Team Efficacy Skills

The UI Health Emergency Department staff demonstrate an above-average score (4.03 on a 5- point Likert scale) in Team Efficacy on the WRI. Team efficacy refers to understanding team goals and team roles and demonstrates how well individuals work to achieve an outcome (Mallak, 2017). High levels of Team Efficacy mean individuals understand the team, how each member contributes, and the roles of all those involved. As a result, they can fill in for one another, make adjustments when challenges or obstacles occur, and devise quick workarounds to achieve desired outcomes (Mallak, 2017).

UI Health leaders can leverage this strength by creating opportunities for skill-building exercises. For example, if a staff member cannot attend a Unit Huddle, someone can be assigned to convey the information to the missing team member during the next hour. This activity leverages the skill of working together, practicing responsibility, and developing trust and confidence in the team's ability. In addition, it is a formal opportunity for an adjustment or workaround to share information with a team member that was unable to attend the Huddle.

High levels of Team Efficacy mean that communication is supported by trust and honesty, and outcomes can be achieved through team cohesion and network relationships (Kantur & Iseri-Say, 2012). The UI Health Emergency Department staff should be empowered to communicate with one another. Empowered employees engage in decision-making, generate creative solutions, and exhibit appropriate behaviors when faced with adversity or crisis (Kantur & Iseri-Say, 2012). Leaders can help build skills and train team members to communicate with one another to build trust within the team by assigning staff to committees or workgroups on the unit.

UI Health leaders can also engage staff members in developing and assessing communication strategies. When the staff members alter their roles, participate in ad hoc teams, assume more responsibility, and broaden their perspectives, they begin to understand how their role impacts the team and the unit. In addition, as they lead by example, adjusting their behavior and positions, others on the team learn and grow. Ultimately, all staff members can make adjustments because they understand everyone's role, how they contribute to the unit, and what it takes to achieve success. By partnering with staff, members of the team are engaged and empowered to contribute to critical communication planning, development, and distribution.

5. Expand Utilization of Internal Resources

Consider expanding the use of EPIC and the Intranet Tiles for communication approaches. All clinical staff members engage with the EPIC system for patient care, offering critical communication distribution opportunities. Embedding messages, change initiatives, or

newly released evidence for testing or treatment planning, would offer a platform for point of care criteria in real-time. Consistent with the best practices described in Recommendation #1, the information would be relevant, logical, and actionable. Resources must be allocated by senior leadership for programming, maintenance, and training before implementation. A group of dedicated IT professionals is needed to provide real-time communication updates, edits, and deletions on the Intranet Tile site. Instead of hiring a single individual, a group is an ideal solution as it would enable information exchange 24 hours per day/7 days per week. A mechanism that enables real-time communication and Intranet Tile updates are critical to ensuring this option's success. While this recommendation is associated with considerable expense from the needed personnel, the potential risk reduction may contribute to significant organizational savings and be well worth the expenditure.

Several UI Health Emergency Department leaders and staff members site the Intranet Tiles as a potentially helpful resource and communication platform. A web-based, mobile device application with user-friendly navigation would prevent the frustration or distress associated with searching through email boxes for the latest information and updates. Accessible information, as found on a web-based or mobile application, allows staff to stay abreast of evolving information by simply using their mobile device. As many UI Health staff are technology users, the application may be easily integrated into future communication strategies and crisis planning.

6. **Consider Targeted and Controlled Social Media Platforms**

As many are heavy consumers of social media, in social networks, blogs, forums, or sharing sites, determining how social media can improve communication in a crisis or uncertain situation is an opportunity for UI Health Emergency Department leaders (Leykin et al., 2016). The use of a web-based application or a social media platform requires careful consideration, targeting plans, and privacy and security planning. Additionally, the organization should consider the potential benefits and perceptions of use. While getting to "Understand the Audience," as Recommendation #3 suggests, leaders should discuss the potential utilization of social media sites and the UI Health Emergency Department staff perceptions and concerns. Creating an online community to share information, strategic planning, proactive strategies, and strategic responses can be an effective mechanism for distributing critical risk or crisis-related information (Leykin et al., 2016).

Limitations

The study has several significant limitations. First, the study was conducted in one location with a limited number of participants; thus, the findings are limited in generalizability and may not represent Emergency Departments at large (Babbie, 2017). Secondly, the qualitative methods used to create categories, change status, and an action index score on the message board entries are subjective and subject to the coder's background and biases. While independent reviews were conducted to ensure consistency in approach and application of the change status and action index, the application may still be biased. A third limitation is the use of only one tool to measure resilience. There are many methods used to consider and measure levels of resilience that were not considered in this study (Son et al., 2019). Finally, there are

limitations in the self-reports included in the survey component of the study. Participants may choose answers they believe are more socially acceptable rather than being honest to avoid embarrassment or fear of retribution. Participants may have personal bias and may have used the rating scales and viewed the meaning of questions differently. As a result, survey research is generally weak on validity but strong on reliability as it eliminates biased observations made by observers or interviewers (Babbie, 2017). Finally, those who completed the survey may not adequately represent the department. At the time of the survey, over 58% of respondents had been a member of the UI Health Emergency Department for five years or less, which may skew the results and differ from those who have worked in the department for more extended periods of time.

Conclusions

The stress, ambiguity, conflict, and uncertainty of a situation can influence leadership decisions on sense-making and subsequent communication approaches (Dixon et al., 2017). The UI Health Emergency Department leadership team was challenged by the extreme context created by the COVID-19 pandemic. The crisis threatened patient's and staff's safety and well-being and created ongoing concerns that organizational resources would fail to meet the unprecedented demand. They needed to create effective communication strategies to ease fear and tension and create a path to coping and adaptation.

Creating an effective communication strategy is a challenging and complex task as it must be an integrated and ongoing process influenced by the events and requirements of any given situation (Seeger, 2006). There is no simple solution, nor is there a single method that meets all organizational needs in times of crisis. As a matter of best practice, and to reduce the receivers' cognitive demand, communication is more effective when it is clear and simple, appeals to reason and emotion, and is strategically matched to the audience's needs and culture (Reynolds & Seeger, 2005).

Despite the uncertainty, the rapidly fluctuating and conflicting information, the UI Health Emergency Department leadership and staff were heroes in the fight against COVID-19. They balanced the need to minimize transmission, protect and support health care workers, preserve resources, keep abreast of testing and treatment advances, and care for all patients in need. The leaders demonstrated empathy, competency, bricolage, and commitment to the staff, patients, and organization. They overcame their fears and focused on the capabilities of resilience, anticipation, coping, and adaptation. They created innovative and comprehensive communication mediums that transcended the scope of their duties. They also unified their focus, overcame barriers, false narratives, and a relentless influx of conflicting information to communicate, evolve, and support their team and patients. In the true spirit of resiliency, they listened, coped, adapted, and transformed, so they not only emerged from the pandemic but they move forward stronger and better equipped for the next unexpected event.

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Appendices

Appendix A- Empathy Interview Questions

Research Question	Question	Framework/Objective
Context	How do you think the pandemic differed from your "usual emergency situations"?	Background/Overview Anticipation
Context	Can you tell me about a time when you knew the "old ways" of doing things were not going to be effective during the pandemic?	Background/Overview Anticipation
R3	How did you anticipate what would need to be done?	Resilience-Anticipation Acquisition of information
R1	How did you learn about important changes or initiatives during the crisis? (internal and external sources)	Resilience-Anticipation Acquisition of information
R1	Who had expertise?	Resilience-Anticipation Acquisition of information Sense-making
R1	Who made things confusing?	Resilience-Anticipation Acquisition of information Sense-making
R1	What communication methods were available to you during the pandemic? (technology-intranet, apps, whiteboards, verbal, written, visual)	Anticipation Bricolage
R1	Which communication methods did you use to communicate during the pandemic?	Communication methods Bricolage
R1	Who was the target audience of your communication?	Communication methods Receivers
R1	What are a few examples of important changes or initiatives that you needed to communicate?	Communication
R1	What was the response to the directive/communication?	Receivers/response
R1	Which strategies do you think were the most effective and why?	Response Perception
R2	Which communication strategies do you think the staff or your team preferred?	Perception
R3	How did you and the team cope with the evolving issues?	Resilience-coping Active problem-solving
R3	How did things go wrong?	Coping-learning as crisis

R3	How did you recover when things went wrong?	Resilience-adaptation Active problem-solving Team efficacy Confident sense-making Bricolage
R1	Talk about how the decisions you made impacted others?	Coping/Action
R2	Are there any specific policies that seemed out of touch during the pandemic?	Adaptation
R2	Are there any specific technologies that seemed out of touch during the pandemic?	Adaptation
R3	Did you use any resources (you had access to) in new or different ways?	Resilience-adaptation Bricolage Active problem-solving
R3	What was a successful adaptation made by the unit during the pandemic?	Adaptation
R3	As you reflect on the pandemic, what do you feel proud of?	Adaptation
Context	What's working well right now?	Adaptation

Appendix B-Information Sheet for Interview

Thank you for agreeing to meet with me. As you know, I am conducting a research study called *"Communication and Resiliency in a Metropolitan Emergency Department During and After the COVID-19 Crisis".*

The purpose of this study is to measure levels of staff resilience and determine what communication strategies were utilized in the Emergency Department during the COVID-19 pandemic and determine areas for improvement.

I am interested in your experiences as a leader in the department during the pandemic. Your participation will involve one informal interview that will last between thirty minutes and an hour. The only known risk of this research is a loss of confidentiality. Please know that I will do everything I can to protect your privacy. Neither your identity nor your personal information will be disclosed in any publication that may result from the study. Notes that are taken during the interview will be stored in a secure location.

Would it be all right if I recorded our interview? Saying no to recording will not affect the interview.

You may choose not to answer any question.

Do you have any questions before we get started?

Do you agree to participate in this interview?

Appendix C- Information Sheet for Survey

You are being invited to participate in a research study titled *"Communication and Resiliency in a Metropolitan Emergency Department During and After the COVID-19 Crisis"*. This study is being conducted by Kimberly Rusk from Vanderbilt University. You were selected to participate in this study because you are an employee of the Emergency Department at UI Health and have worked for the department since March 2020. Participation in this study is voluntary.

The purpose of this research study is to investigate what communication strategies were utilized in the Emergency Department at UI Health during the COVID-19 pandemic and determine areas for improvement.

If you agree to participate in this study, you will be asked to complete an online survey/questionnaire (contained in the link below). This survey/questionnaire will ask about the communication methods used during the pandemic and your perceptions. You will also be asked questions that help determine organizational resilience, or the ability to respond to, cope with, and bounce back from unexpected events. The online survey/questionnaire will take you approximately *10-20* minutes to complete.

You may not directly benefit from this research; however, we hope that your participation in the study may help the leadership of the Emergency Department at UI Health develop effective communication strategies for use during crises or unexpected events.

We believe there are minimal risks associated with this research study; however, a risk of breach of confidentiality always exists. Efforts will be made to keep the information in your survey confidential. The survey software (Qualtrics) will store data in a central repository that is not connected to your email address or IP address. No personal information will be collected.

If you choose to participate and fully complete the survey/questionnaire, you will be entered into a raffle to receive a $100 Amazon gift card.

If you have questions about this project or a research-related problem, you may contact the researcher, Kimberly Rusk, at 708-380-0376. If you have any general questions about giving consent or about your rights as a participant in this study, you may call Vanderbilt University's Institutional Review Board at 615-322-2918.

By completing this survey, you are consenting to participate in this study.
*You may print or save a copy for your records.

Appendix D-Message Board Data Summary

Message Board Analysis/Summary

Total Number of Messages		
Message Cateogry	Number of Messages	
Operational	336	51%
PPE	137	21%
Support	40	6%
Testing	100	15%
Treatment	46	7%
Total	659	100%

Number of Day to Day Changes in Messages		
Change Status		
No Change	271	41%
Change	388	59%
Total	659	100%

Day to Day Change by Message Category				
Day to Day Change by Message Category	No Change		Day to Day Change	
Operational	120	44%	216	56%
PPE	57	42%	80	58%
Support	37	93%	3	7%
Testing	42	42%	57	58%
Treatment	14	30%	32	70%
	270	41%	388	59%

Action Index				
Definition	Action Required	Action Index	Total Messages	% of Messages
Informational	None	0	322	49%
Resource (for patients or staff)	May need to use information	1	33	5%
Informational with possible behavior change	Optional action	2	162	25%
Change required-operational efficiency	Same day action required	3	94	14%
Immediate change required-involving care of a patient, or care of self	Same day immediate action required	4	49	7%
Critical change required-emergency situation	Same day critical action required	5	0	
Total			660	100%

Action Index by Level					
Action Index	Level 4	Level 3	Level 2	Level 1	Level 0
Operational	0	24	73	31	208
PPE	16	38	48	0	35
Support	0	0	0	0	40
Testing	23	25	23	0	28
Treatment	10	7	18	2	12
Total	49	94	162	33	323
Action Index	Level 4	Level 3	Level 2	Level 1	Level 0
Operational	0%	26%	45%	94%	65%
PPE	33%	40%	30%	0%	11%
Support	0	0%	0%	0%	12%
Testing	47%	27%	14%	0%	8%
Treatment	20%	7%	11%	6%	4%

Appendix E-Survey Summary

Communications and Perceptions Survey Analysis/Summary

S* — Distribution Channel

Distribution Channel		
Email	22	40%
Paper	33	60%
n =	55	
*Survey method		
Demographics of study respondents		

Q1 — Please indicate your role in the Emergency Department:

Role		
Nurse	35	64%
EMT	7	13%
PSA	3	5%
Physician	0	0%
Other	10	18%
n =	55	

Q2 — Please indicate the number of years you have worked in the UI Health Emergency Department:

Years		
Under 5 years	32	58%
6-10 years	7	13%
11-15 years	8	15%
16-20 years	4	7%
More than 20 years	4	7%
n =	55	

Q3 — How did you learn, or access, information related to your position/job function during the COVID pandemic? (select all that apply)

Method		
Email	53	96%
Unit Huddle	45	82%
Face-to-Face	33	60%
Staff Meeting	27	49%
Employee Intranet Tiles	27	49%
Employee Rounding	21	38%
Paper-Based Communication	17	31%
Message Board	17	31%
Phone Conversation	10	18%
Text	4	7%
UIC Safe App	3	5%
n =	55	
total responses	257	
Average Methods	4.7	

R1: How was information communicated to UI Health Emergency Department Staff during the recent COVID-19 pandemic?

R2: What is the level of resilience in the UI Health Emergency Department Staff?

R3: What were the perceptions of the various communication strategies utilized during the COVID-19 pandemic in the UI Health Emergency Department Staff?

Q4 — What communication methods were used by the UI Health emergency department leadership team during the pandemic? (select all that apply)

Method		
Email	52	95%
Unit Huddle	44	80%
Face-to-Face	28	51%
Staff Meeting	23	42%
Employee Rounding	20	36%
Paper-Based Communication	19	35%
Message Board	18	33%
Employee Intranet Tiles	17	31%
Text	7	13%
Phone Conversation	3	5%
UIC Safe App	2	4%
n =	55	
total responses	233	
Average Methods	4.2	

Q5 — What communication strategies do you think were the most effective during the pandemic? (select all that apply)

Strategy		
Unit Huddle	43	78%
Email	42	76%
Face-to-Face	30	55%
Staff Meeting	18	33%
Message Board	12	22%
Employee Intranet Tiles	10	18%
Paper-Based Communication	9	16%
Employee Rounding	5	9%
Text	4	7%
Phone Conversation	3	5%
UIC Safe App	3	5%
n =	55	
total responses	179	
Average Methods	3.3	

Q6 — During the pandemic, what communication strategies helped you make adaptations or changes from your routine BEFORE the

Strategy		
Unit Huddle	27	52%
Email	19	37%
Message Board	7	13%
Face-to-Face	6	12%
Staff Meeting	3	6%
Text	2	4%
Paper-Based Communication	1	2%
Employee Rounding	1	2%
UIC Safe App	1	2%
Webex	1	2%
Communication by Charge Nurse	1	2%
Word of mouth from coworkers	1	2%
n =	52	
total responses	70	
Average Methods	1.3	

Q7 — During the pandemic, what communication strategies helped you make adaptations or changes from your routine DURING your shift?

Strategy		
Unit Huddle	30	59%
Face-to-Face	21	41%
Email	16	31%
Message Board	8	16%
Text	4	8%
Employee Rounding	3	6%
Staff Meeting	1	2%
Talking with Peers	1	2%
Word of mouth from coworkers	1	2%
n =	51	
total responses	86	
Average Methods	1.4	

Q8 — What do you think is the best way to communicate CRITICAL information BEFORE your shift?

Method		
Unit Huddle	27	50%
Email	17	31%
Face-to-Face	15	28%
Text	14	26%
Message Board	8	15%
Phone Conversations	4	7%
UIC Safe App	2	4%
Staff Meeting	1	2%
Paper Based	1	2%
Employee Rounding	1	2%
Employee Intranet Tiles	1	2%
n =	54	
total responses	91	
Average Methods	1.7	

Q9 — What do you think is the best way to communicate CRITICAL information DURING your shift?

Method		
Face-to-Face	27	50%
Unit Huddle	26	48%
Email	12	22%
Employee Rounding	4	7%
Message Board	3	6%
Text	3	6%
Announcements	3	6%
Staff Meeting	2	4%
Phone Conversations	1	2%
UIC Safe App	1	2%
Employee Intranet Tiles	1	2%
n =	54	
total responses	83	
Average Methods	1.5	

Q10 — What information did you ignore?

Information		
Not applicable	26	47%
Emails	10	18%
Employee Intranet Tiles	5	9%
False information/hear say	3	5%
Flyers	2	4%
Repeated information	2	4%
Phone messages	1	2%
Rapidly changing information	1	2%
UIC Safe App	1	2%
Ads	1	2%
Bed Information	1	2%
Changes in testing	1	2%
Huddles	1	2%
n =	55	
total responses	55	
Average Methods	1	

Q11 — How would you like to receive information going forward? (select all that apply)

Method		
Email	41	75%
Unit Huddle	40	73%
Face-to-Face	33	60%
Staff Meeting	21	38%
Employee Rounding	20	36%
Text	20	36%
Message Board	17	31%
Phone Conversation	10	18%
Employee Intranet Tiles	9	16%
Paper-Based Communication	9	16%
UIC Safe App	5	9%
n =	55	
total responses	225	
Average Methods	4.1	

Q13 — During the pandemic, I knew who was in charge.

Response		
1 = Not true at all	1	2%
2 = Rarely true	3	5%
3 = Sometimes true	8	15%
4 = Often true	14	25%
5 = True nearly all the time	29	53%
n =	55	
TOTAL	232	
AVERAGE	4.2	

Q14 — During the pandemic, I knew who had expertise.

Response		
1 = Not true at all	0	0%
2 = Rarely true	4	7%
3 = Sometimes true	18	33%
4 = Often true	21	38%
5 = True nearly all the time	12	22%
n =	55	
TOTAL	206	
AVERAGE	3.7	

Q15 — During the pandemic, I was confused by the communication I received.

Response		
1 = Not true at all	11	20%
2 = Rarely true	5	9%
3 = Sometimes true	18	33%
4 = Often true	16	29%
5 = True nearly all the time	5	9%
n =	55	
TOTAL	164	
AVERAGE	3	

Q16 — During the pandemic, I felt well informed.

Response		
1 = Not true at all	5	9%
2 = Rarely true	6	11%
3 = Sometimes true	18	33%
4 = Often true	17	31%
5 = True nearly all the time	9	16%
n =	55	
TOTAL	184	
AVERAGE	3.3	

Resilience Analysis/Summary

Q17	I enjoy improvising solutions to problems.		Q18	I take delight in solving difficult problems.		Q19	solutions when solving a problem.		Q20	Team goals guide my individual actions.	
Total	207		Total	224		Total	224		Total	223	
Average	3.76		Average	4.0727		Average	4.072727273		Average	4.055	
1=	5	9%	1=	0	0%	1=	0	0%	1=	0	0%
2=	2	4%	2=	1	2%	2=	1	2%	2=	1	2%
3=	11	20%	3=	13	24%	3=	7	13%	3=	11	20%
4=	20	36%	4=	22	40%	4=	34	62%	4=	27	49%
5=	17	31%	5=	19	35%	5=	13	24%	5=	16	29%
n =	55		n =	55		n =	55		n =	55	
	Active Problem Solving			Active Problem Solving			Active Problem Solving			Team Efficacy	

Q21	decisions affecting my team.		Q22	roles with my team members.		Q23	I understand my team's overall goals.		Q24	situations with confidence.	
Total	236		Total	201		Total	227		Total	228	
Average	4.291		Average	3.72		Average	4.127		Average	4.145	
1=	0	0%	1=	4	7%	1=	0	0%	1=	0	0%
2=	0	0%	2=	2	4%	2=	1	2%	2=	0	0%
3=	4	7%	3=	15	27%	3=	10	19%	3=	12	22%
4=	31	56%	4=	22	40%	4=	23	43%	4=	23	42%
5=	20	36%	5=	12	22%	5=	20	37%	5=	20	36%
n =	55		n =	55		n =	54		n =	55	
	Team Efficacy			Team Efficacy			Team Efficacy			Confident Sense-Making	

Q25	situation when it becomes chaotic.		Q26	I know what resources to access.		Q27	I openly share information with others.		Q28	I can perform the roles of my other team members.	
Total	236		Total	219		Total	241		Total	215	
Average	4.291		Average	3.982		Average	4.382		Average	3.909	
1=	0	0%	1=	0	0%	1=	0	0%	1=	1	2%
2=	1	2%	2=	1	2%	2=	1	2%	2=	1	2%
3=	3	5%	3=	11	20%	3=	5	9%	3=	14	25%
4=	30	55%	4=	31	56%	4=	21	38%	4=	25	45%
5=	21	38%	5=	12	22%	5=	28	51%	5=	14	25%
n =	55		n =	55		n =	55		n =	55	
	Confident Sense-Making			Confident Sense-Making			Confident Sense-Making			Confident Sense-Making	

Q29	I have access to the resources I need.		Q30	I have the knowledge needed to do my job.		Q31	I exercise creativity when under extreme pressure.		Q32	becomes chaotic, I get a renewed focus on the problem.	
Total	210		Total	240		Total	232		Total	225	
Average	3.818		Average	4.364		Average	4.218		Average	4.091	
1=	2	4%	1=	0	0%	1=	0	0%	1=	0	0%
2=	0	0%	2=	0	0%	2=	0	0%	2=	2	4%
3=	17	31%	3=	7	13%	3=	7	13%	3=	10	18%
4=	23	42%	4=	21	38%	4=	29	53%	4=	24	44%
5=	13	24%	5=	27	49%	5=	19	35%	5=	19	35%
n =	55		n =	55		n =	55		n =	55	
	Confident Sense-Making			Confident Sense-Making			Bricolage			Bricolage	

Q33	I take calculated risks when the situation calls for it.		Q34	becomes chaotic, I take time to reflect on next steps.		Resilience:	Communications Survey	Sum	Divided by	Total
Total	198		Total	214		ActiveProblem Solving	Items 17-19	655	3	218.33
Average	3.600		Average	3.96		Team Efficacy	Items 20-23	886	4	221.50
1=	1	2%	1=	0	0%	Confident Sense-Making	Items 24-30	1589	7	227.00
2=	8	15%	2=	1	2%	Bricolage	Items 31-34	869	4	217.25
3=	16	29%	3=	14	26%	(#16 and #17 missing,				
4=	17	31%	4=	25	46%	divide by 4 instead of 6)				
5=	13	24%	5=	14	26%					
n =	55		n =	54	100%					
	Bricolage			Bricolage						