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9-1-1 Leadership: Perceptions of Evidence-Based Quality Improvement

Abstract

The quality of 9-1-1 services can mean the difference between life and death. In 2015, national 9-1-1 organizations created a minimum standard for Public Safety Answering Point (PSAP) comprehensive quality improvement programs, yet there is no mandate for PSAPs to adopt such standards. This study focuses on quality improvement perceptions among New York State (NYS) wireless PSAP leaders from an evidence-based management theory framework. The study addresses the primary research question: How do NYS wireless PSAP leaders support effective implementation of quality care? Using directed content analysis out-transcripts from focus group sessions with NYS wireless PSAP leaders, the following themes emerged: PSAP leaders support effective implementation of quality care by achieving buy-in from stakeholders, building trust as leaders, and using local data to support their decision-making processes. While participants consistently agreed on general definitions of PSAP quality using a six dimensional model, measuring quality was inconsistent from agency to agency. Time, staffing, and funding were largely seen as barriers to effective implementation, while other factors such as training and accreditation were viewed positively. Stakeholder engagement and organizational culture were perceived as neutral, yet instrumental, to success.

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of the requirements for the degree
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St. John Fisher College

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Dedication

This dissertation is dedicated to my wife Danielle and our four wonderful children who endured the many missed family events, last minute demands for access to computers, and numerous draft readings to support my efforts and transformation during this process. I also wish to thank my parents, and Danielle's family for their understanding and encouragement. I would like to thank the Genesee County leadership for investing their time in developing me as a leader. For Team CORE, I am thankful for your willingness to take the journey with me. I wish to thank my chair Dr. Montes for his enthusiasm and his gentle guidance while shepherding this process and my committee member Dr. Bell for helping me fine-tune my thinking and language. I want to express my gratitude to the United States Congress, the Department of the Air Force, the Department of Veteran's Affairs, and the St. John Fisher Yellow Ribbon program for providing financial support to thousands of veterans who, like me, would not have the opportunity to grow as scholars and contribute to a greater society if not for the Post 9-1-1 and Montgomery GI Bills. Finally, I wish to thank my Lord and Savior, Jesus Christ, for the grace and mercy to provide me the relationships, tools, and resources to achieve more than I could do on my own and in spite of my own shortcomings.

Biographical Sketch

Steven C. Sharpe graduated with a B.S. History degree from the United States Air Force Academy in 1997 as a 2nd Lieutenant in the United States Air Force. He received a M.A. Education degree from Central Michigan University in 2001. After 8 years of service as an Intelligence Officer, he began his career as the Genesee County, NY Director of Emergency Communications supervising the county 9-1-1 center, managing the public safety radio system, and administering public safety information technology implementations. He is chair of the Federal Communications Commission Public Safety 700 / 800 MHz Region 55 (WNY – Buffalo) Planning Committee and vice chair of the Finger Lakes Regional Interoperable Communications Consortium. He is a member of the New York State Communications Interoperable Working Group and Next-Generation 9-1-1 Working Group.

Abstract

The quality of 9-1-1 services can mean the difference between life and death. In 2015, national 9-1-1 organizations created a minimum standard for Public Safety Answering Point (PSAP) comprehensive quality improvement programs, yet there is no mandate for PSAPs to adopt such standards. This study focuses on quality improvement perceptions among New York State (NYS) wireless PSAP leaders from an evidence-based management theory framework. The study addresses the primary research question: How do NYS wireless PSAP leaders support effective implementation of quality care? Using directed content analysis out-transcripts from focus group sessions with NYS wireless PSAP leaders, the following themes emerged: PSAP leaders support effective implementation of quality care by achieving buy-in from stakeholders, building trust as leaders, and using local data to support their decision-making processes. While participants consistently agreed on general definitions of PSAP quality using a six dimensional model, measuring quality was inconsistent from agency to agency. Time, staffing, and funding were largely seen as barriers to effective implementation, while other factors such as training and accreditation were viewed positively. Stakeholder engagement and organizational culture were perceived as neutral, yet instrumental, to success.

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Chapter 1: Introduction

9-1-1 was designed as a quick way to notify public safety agencies such as police departments, fire departments, sheriff's offices, ambulance companies, or independent 9-1-1 centers of an emergency. As public acceptance of 9-1-1 increased, Public Safety Answering Points (PSAPs) were created to handle the calls made by people in distress. The quality of 9-1-1 services can mean the difference between life and death, especially for callers relying on the expertise of PSAP employees (DeLong v. County of Erie, 1982).

The demands and duties placed on PSAPs have grown due to technological changes, civil cases alleging negligence, and the emergence of national standards of care. As standards of care became more refined, states and local governments reacted by creating governance structures to reinforce adherence to standards. Recently, nationally recognized 9-1-1 organizations created a minimum standard for PSAP comprehensive quality improvement programs (Association of Public Safety Communications Officials [APCO], 2015). This dissertation studies the quality improvement perceptions of PSAP leaders from an evidence-based management theoretical framework.

9-1-1 Standards Influence Model

To understand the development of nationally accepted 9-1-1 best practices, we need to evaluate how different levels of governance, technology, civil cases, critical incidents, and accreditation influenced how the 9-1-1 community performed their duties. Figure 1.1 depicts a rudimentary model of the interactions among the multiple dynamics.

The solid lines represent direct influential relationships, the dashed lines represent loose or indirect influential relationships. The arrows depict the direction of influence. One line, between the state government and local PSAPs, is an alternating line because the influential relationship depends on the state the PSAP is located within. Some states directly control their PSAPs, whereas most states have an indirect influence on PSAPs. Regardless of level of influence, some balance between local implementation and state regulation must be achieved to optimize the standards of care adopted by PSAPs. Federal, state, and local governance influences are discussed later.

The three major external influences are 9-1-1 technology, civil cases, and critical incidents. They are external because they are outside the control of the PSAP community and may reflect public demands of PSAPs. No one can predict how technology will influence the transport, delivery, and display of 9-1-1 information, or what new innovations will come along changing how PSAPs handle that same information. Similarly, no one can predict what incident will result in a civil case being brought to court nor the level of impact such cases will have on the PSAP community. Critical incidents are unpredictable by nature. All three external influences will continue to impact PSAP standards development as discussed later in this chapter.

Finally, accreditation influences local PSAP through self-regulation. Local PSAPs must make the conscious decision to seek accreditation. The level of influence depends on the standards of the accrediting authority.

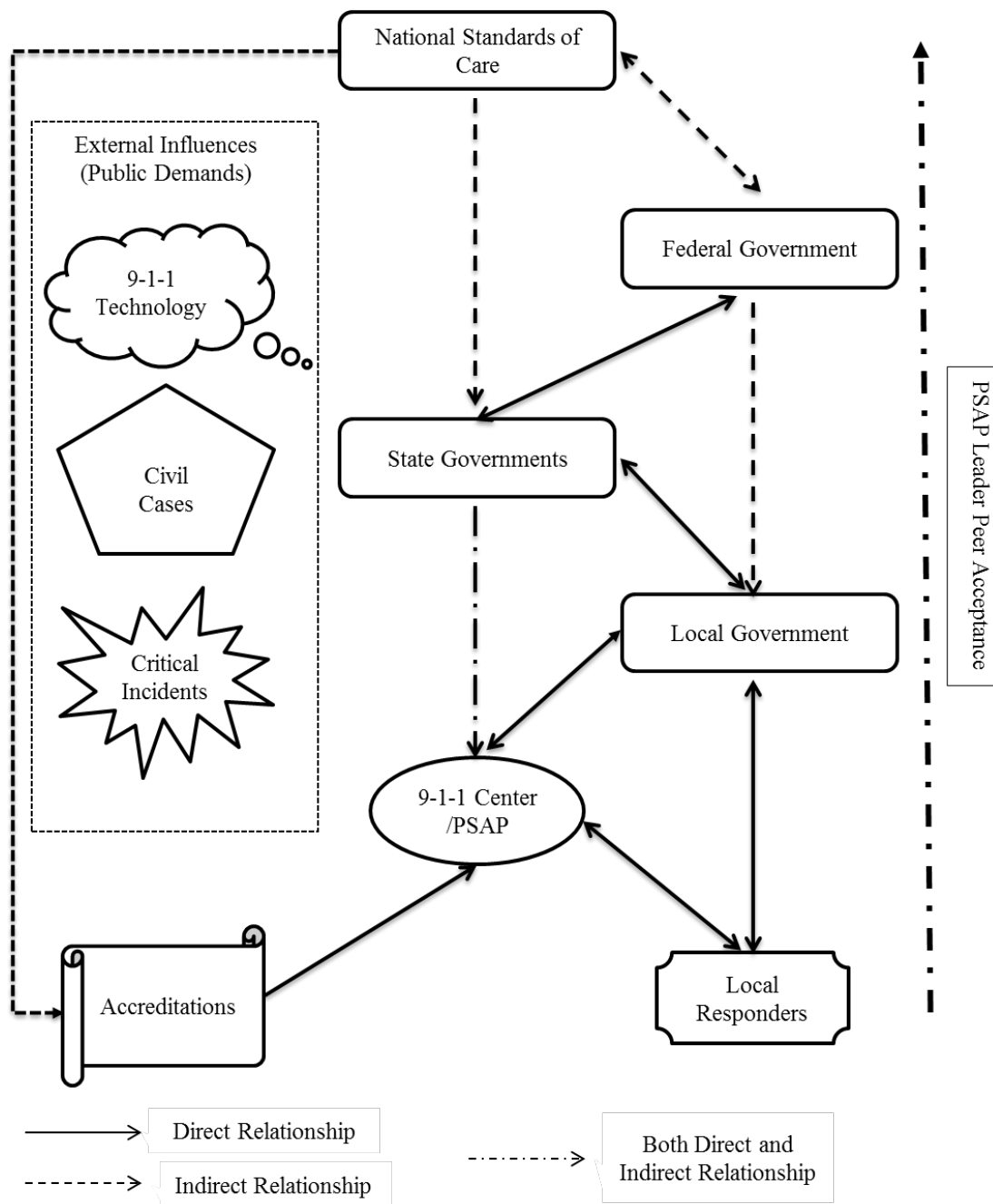


Figure 1.1. 9-1-1 Standards Influence Model.

9-1-1 History and Development

The first 9-1-1 call was made in Haleyville, Alabama in 1968 as a proof of concept (National Emergency Number Association [NENA], n.d.-a). Since then, communities slowly implemented 9-1-1 technologies, procedures, and best practices for collecting information from callers, dispatching public safety agencies, and providing critical updates to responders (Athey & Stern, 2002; Ornato, 2013; Shah, Bishop, Lerner, Czapranski, & Davis, 2003). Many of the procedures or practices in use today arose out of changes in technology (APCO, 2013; Athey & Stern, 2002; Hevesy, 2004) and tragedy (9/11 Commission, 2004; APCO, 2015; DeLong v. County of Erie, 1982). Both technology and tragedy influenced federal, state, and local governments to change policies, procedures, and governance models to meet the demands of the public. The emergence of national standards of care and the 2015 adoption of a minimum standard for comprehensive quality improvement programs (APCO, 2015) influenced local PSAP decisions regarding staffing, policy development, and accreditation.

Technology and technological change. The adoption of 9-1-1 as the primary emergency contact number progressed during the 1970s to the 1980s as public safety agencies established telephone routing agreements with the local telephone carrier. Basic 9-1-1 only provided free call routing to the designated PSAP within the community (NENA, n.d.-a). Most PSAPs were created within existing local public safety agencies as communities transitioned from local seven-digit emergency lines to 9-1-1.

In the 1980s and 1990s, Enhanced 9-1-1 services provided PSAPs with detailed information about the caller's phone number and the address associated with the phone line (National Highway Traffic Safety Administration [NHTSA], 2013). The new

technology led agencies to purchase more complex equipment in order to receive the call data and enter that information into Computer Aided Dispatch or “CAD” Systems (Athey & Stern, 2002). A CAD system is a networked data management system that allows a 9-1-1 telecommunicator to type information received from the 9-1-1 call such as location, caller name, what type of services were requested, and other narrative entries. The CAD uses the location and the requested services to determine what public safety agencies to send, how many of each responder unit type are needed, and if a response plan existed for that type of emergency.

The 1999 Wireless and Public Safety Telecommunications Act established 9-1-1 as the national emergency number and provided a timeline to adopt changes in wireless 9-1-1 technology (NHTSA, 2013). As wireless technology and mobile devices became smaller and more popular, PSAPs adopted wireless location technology allowing centers to locate cellular phone callers to within 300 meters in any direction, an area encompassing approximately 70 acres (NHTSA, 2013). Although the technology provided unique advantages, it also created significant challenges.

Approximately 70% of all 9-1-1 calls come from wireless devices, many of them accidental (NENA, n.d.-b). PSAPs have to spend time trying to locate the caller within that 70-acre footprint, which is roughly the size of three to four city blocks or a small college campus. Considering the phone is mobile, that 70-acre footprint is constantly moving, such as a prank call from a student on a school bus. Additionally, PSAP employees, professionally known as telecommunicators, have to stay on the line to determine if the caller is deaf, hard of hearing, under duress, or if the caller accidentally called 9-1-1.

Internet-based callers pose significant challenges as the location information provided to PSAPs from voice over Internet providers, such as Vonage or Spectrum Cable, is based on the home address the customers enter into their account (Rushnak, 2007). For example, a student attending college in Kansas uses his or her parent's Vonage account from Massachusetts. A 9-1-1 Internet call from that student in Kansas will be routed to the PSAP that services the parent's home in Massachusetts instead of the local PSAP in Kansas. The misrouted call causes confusion and delays as there is currently no way to transfer the 9-1-1 call back to Kansas. In some instances, the consequences are deadly as responders are sent to the incorrect location (Londono, 2006).

9-1-1 civil cases and liability. One of the landmark cases taught to many new telecommunicators was the 1976 case of *DeLong v. County of Erie* (APCO, 2005; Clawson, Dernocoeur, & Rose, 2012). In 1976, Amalia DeLong called 9-1-1 telling the calltaker there was a burglar trying to break into her house. She lived approximately 1,300 feet from the Village of Kenmore Police Department (Roberts, 1983, para. 6). Her 9-1-1 call was routed to the Erie County PSAP where the calltaker told her police would be sent "right away" (*DeLong v. County of Erie*, 1982, para. 3). Unfortunately, the calltaker assumed the call came from the City of Buffalo and sent the wrong agency to the wrong address. Amalia died of her stabbing wounds because when Buffalo Police determined no such address existed in the City of Buffalo, the dispatchers never took further action. Amalia's husband sued the County of Erie for wrongful death and won.

The case became a trigger event resulting in changes in procedure and technology within the 911 community. It established the legal precedent that a municipality could be sued for negligence and 9-1-1 telecommunicators had a legal duty to act (*DeLong v.*

County of Erie, 1982). It also established the critical nature of determining a caller's location. In 1976, Enhanced 9-1-1 did not exist. The telecommunicator had no geographical reference when Amalia stated her address was 319 Victoria. The telecommunicator assumed she meant Victoria Avenue in the City of Buffalo, not Victoria Boulevard in the Village of Kenmore. The need to accurately locate callers became the basis for a majority of 9-1-1 technological advances such as Enhanced 9-1-1 which could have made the difference in Amalia's case if the telecommunicator had the caller's community (e.g., the Village of Kenmore) available.

Despite technological advances, accurately passing location to responders served as the focus of another wrongful death case in 2008. Denise Amber Lee was kidnapped, raped, and murdered despite at least five 9-1-1 calls regarding her location, one of which Denise made from the cell phone of her captor. The final call was from a witness who called 9-1-1 and gave accurate location information to a telecommunicator as she followed Denise and her abductor for "more than nine minutes, identifying cross streets as she continued driving" (Denise Amber Lee Foundation [DALF], 2016, para. 1). Inefficiencies within the 9-1-1 system, poor training, and gross negligence were key allegations in Nathan Lee's suit settled the day after telecommunicators testified in court to agency incompetence (Eckhart, 2012). Using money from the suit and the national attention it garnered, the Denise Amber Lee Foundation partnered with national organizations such as the Association of Public Safety Officials (APCO) and the National Emergency Number Association (NENA) to establish quality improvement standards for all PSAPs in the United States (APCO, 2013a; APCO, 2015; DALF, 2016).

Critical incidents and public awareness. For this dissertation, critical incidents are events that overwhelm the coping mechanisms of individuals or response systems forcing them into crisis (Everly, Flannery, & Mitchell, 2000). Critical incidents can impact the consciousness of a community at the local, state, national, and international level. International critical incidents such as the September 11, 2001 terror attacks can change public safety responder training, protocols, technologies, and funding priorities.

Emergence of 9-1-1 national standards of care. Concurrent to civil cases, national 9-1-1 associations, vendors, and the 9-1-1 community slowly adopted national minimum standards of care based on medical practice, civil case law, federal, and state laws. Jeff Clawson developed the Medical Priority Dispatch System in 1976 to improve patient outcomes, specifically by encouraging PSAPs to provide medical instructions over the phone to reduce the time from call to interventions such as Cardiopulmonary Resuscitation (National Academy of EMD [NAED], 2012). The protocols, standards, and quality improvement measures collectively became called emergency medical dispatch (EMD). Clawson, later known as “the father of EMD,” worked with states, local agencies and public safety attorneys to establish EMD not only as a legally defensible protocol, but a legally mandatory duty to act (NAED, 2012, p. xii)

As the expectations of the public grew thanks to shows like Rescue 911, the duty of PSAPs to provide lifesaving instructions also grew (APCO, 2013a; APCO, 2015; NAED, 2012). Civil liability concepts such as negligent retention, failure to train, telecommunicator abandonment, and detrimental reliance became part of initial and supervisory 9-1-1 courses due to cases where 9-1-1 telecommunicators or the PSAP failed to take appropriate action (APCO, 2005; APCO, 2009; APCO, 2011; APCO,

2013a; NAED, 2012). To combat inconsistencies in 9-1-1 operation, national organizations published standards and agreed to legally support agencies that adopted such standards (APCO, 2011; NAED, 2012). Some organizations such as NAED and Canadian American Law Enforcement Association, or state sheriff's associations offer accreditation to agencies meeting such standards.

Federal and state agencies looked to nationally adopted standards for consensus regarding both 9-1-1 technology and operational standards. The federal government and state governments, such as New York, identified the APCO P25 interoperable radio standard as minimum requirements for grant funding (New York State Department of Homeland Security and Emergency Services [NYSDHSES], 2016a; United States Department of Homeland Security [USDHS], 2016). The federal government, Federal Communications Commission (FCC), National Highway Traffic Safety Administration, and states sought both APCO and NENA comments to develop wireless 9-1-1 technology standards while drafting the 1999 Wireless and Public Safety Telecommunications Act (NENA, n.d.-a; NHTSA, 2013). As of 2013, APCO (2013b) reported 32 states adopted mandatory minimum training standards for new 9-1-1 center telecommunicators, including New York State (APCO, 2013b; 21 NYCRR § 5200, n.d.). However, regulations wildly vary from state to state and some states mandate training for only a select portion of PSAPs (NHTSA, 2013; NYSDHSES, 2015).

Growth of statewide 9-1-1 governance structures. Although there is a movement to create standardized protocols and consolidate PSAPs, most centers in the United States remain largely decentralized with limited state or federal oversight into their daily operations. Development of 9-1-1 systems began primarily as local and state

facilitated endeavors, managed at the local level, with little governance regarding coordination between municipal or state jurisdictions (NHTSA, 2013; United States Department of Transportation [USDOT], 2013). A 2010 national survey of 1,924 PSAPs revealed the average number of dispatchers is 16.37 (SD 21.55, median 10, range 6-16), showing most centers remained relatively small (Sutter et al., 2015). National and state laws regarding 9-1-1 funding mechanisms and the emergence of Next Generation 9-1-1 technological challenges thrust state governments into the forefront of 9-1-1 governance structures across the country (NHTSA, 2013; USDOT, 2013).

Enhanced 9-1-1 and Wireless 9-1-1 location technological advances required significant changes to local 9-1-1 system equipment, which many local agencies could not afford. Therefore, states developed funding streams to offset the equipment costs in return for some state 9-1-1 governance over local centers (Athey & Stern, 2002; Hevesy, 2014; NHTSA, 2013; USDOT, 2013). Federal laws such as the Wireless Communications and Public Safety Act of 1999, Enhance 911 Act of 2004, and FCC regulations reinforced states as the appropriate governing authority, yet did not explicitly mandate such governance (NHTSA, 2013). As a result, states developed uneven governance structures across a wide range of oversight. State laws determined local surcharges, excise taxes, or universal service fund revenues remitted to local or state agencies, but most state laws “stop short of addressing the full operational scope of 9-1-1 service” such as minimum training standards, staffing, quality improvement, or other best practices (NHTSA, 2013, p. 14).

In 2013, the USDOT identified seven broad categories defining the level of state oversight and categorized a majority ($n=31$) of states as having “State-level 9-1-1

authority with statewide geographic planning, coordination, funding responsibility for full scope of 9-1-1” (p. 10). Most state 9-1-1 governance structures were part of another state agency and not a dedicated authority (NHTSA, 2013; USDOT 2013). Interestingly, Georgia’s state 9-1-1 plan was viewed by the federal government as a “good example” for other states (NHTSA, 2013, p. 49), but a 2015 telecast showed the Georgia board failed to meet for years because there was no one appointed to the board (Keefe & Kish, 2015). Even more remarkable, was the fact that five states had little to no state oversight of 9-1-1 operations as of 2013 (NHTSA, 2013; USDOT, 2013). A description depicting state 9-1-1 governance is in Appendix A.

State of New York 9-1-1 governance. Like many other states, the State of New York’s 9-1-1 governance began primarily as a means to fund changes in 9-1-1 technology. In 1989, New York passed the Enhanced Emergency Telephone System Surcharge Law creating state and county 9-1-1 surcharges to fund wireline services and equipment. In 1991, the State of New York amended the law to establish wireless 9-1-1 surcharges (Hevesy, 2004).

In 2002, the State of New York established a State 9-1-1 Board and the Wireless Expedited Deployment Funding program to help counties achieve the FCC mandated wireless phase II location requirements established in the federal 1999 Wireless and Public Safety Telecommunications Act (Hevesy, 2004). The State 9-1-1 Board created the minimum adopted standards covering initial training requirements, minimum staffing, continuing education, emergency medical dispatch, and 911 technology required for county wireless PSAPs (21 NYCRR § 5200, n.d.). Adherence to the adopted standards was a prerequisite for counties wishing to apply for expedited deployment funds or any

state 9-1-1 funding. The NYS adopted standards (21 NYCRR § 5200, n.d.) referenced nationally adopted standards and courses from organizations such as APCO, NAED, and the National Fire Protection Agency (NFPA).

Despite formally adopting standards, instituting an inspection regime, and tying funding to standards, the NYS standard only applied to counties operating wireless PSAPs. By law, only one wireless PSAP was permitted per county, therefore the standards applied to only 56 of the 191 of PSAPs throughout the State of New York (21 NYCRR § 5200, n.d.; FCC, July 31, 2017). In 2010, the State of New York abandoned its inspection regime and absorbed the function of the 9-1-1 board within the newly created State Interoperable and Emergency Communications Board. In 2015, members of the board actively complained that the standards are not applied to all PSAPs and expressed a desire to adopt changes to NY standards that aligned with national standards such as APCO, NENA, and ANSI (NYSDHSES, 2015). By November 2016, the state failed to make progress on either front citing legal and technological barriers while promising to take the board's concerns "under advisement" (NYSDHSES, 2016b, p. 3). Within New York State, the differing applications of standards between wireless PSAPs and non-wireless PSAPs combined with the abandonment of the inspection regime led to 9-1-1 service inconsistencies between communities.

Problem Statement

The quality of service provided by PSAPs is inconsistent due to the lack of mandatory standards of care at the national, state, and local levels. This study specifically focuses on quality improvement perceptions among New York State (NYS) wireless PSAP leaders with regard to evidence-based management theory. As previously

discussed, public demands on PSAP quality developed from technological changes, civil cases alleging negligence, and the emergence of national recommended standards of care, yet governments at all levels have been slow to create governance structures to reinforce adherence to standards. Although nationally recognized 9-1-1 organizations created a minimum standard for PSAP comprehensive quality improvement programs (APCO, 2015) there is no explicit mandate for PSAPs to adopt such national standards.

Given no there are no universal mandates, there are inconsistencies in how different PSAPs approach standards of care. More importantly, even if universal standards of care exist there may be differing interpretations as PSAP leaders apply the standards to their local situation. This study discusses how PSAP leaders' interpretations of quality converged while local quality improvement implementations diverged.

Additionally, there is little scholarly knowledge regarding how PSAP leaders adapt national standards of care, evidence-based practices, and evidence-based management decision making to their local context. While the relevant research literature will be discussed at length in Chapter 2 of this dissertation, it is important to note how little the academic community knows about PSAP quality improvement programs, the evidence they use to select, implement, and sustain evidence-based programs, and most importantly the factors impacting the decisions PSAP leaders make regarding quality improvement and evidence-based management decisions.

Theoretical Rationale

Evidence-based management is “the basing of managerial decisions on the best available evidence” (Robbins & Judge, 2017, p. 11). As governments and PSAP leaders evaluate which standards to adopt or mandate by law, the evidence decision makers use

to justify policy becomes critical to the success or failure of such policies. This next section will briefly cover how proponents describe evidence-based management, critical concerns regarding evidence-based theory, empirical support of the theory, and how evidence-based management theory may apply to PSAP decision-makers.

Proponents of evidence-based management encourage leaders to bridge the research-practice gap to achieve more desirable results in areas related to quality, customer satisfaction, sales, and organizational effectiveness (Glaub, Frese, Fischer, & Hoppe, 2014; Pfeffer & Sutton, 2006; Rousseau & Olivas-Luján, 2013; Wright et al., 2016). As the theory became more refined, the six specific steps of asking, acquiring, appraising, aggregating, applying, and assessing became iterative processes for success (Briner & Walshe, 2014; Morrell & Learmonth, 2015) despite claims that evidence-based management is not a cookbook (Pfeffer & Sutton, 2006; Rousseau & Olivas-Luján, 2013). More recently, adherents recommended opening the decision-making process to more rigorous and contextual evaluation (Briner & Walshe, 2014; Wright et al., 2016). Wright et al. (2016) concludes evidence-based management success requires a “more balanced view . . . in which managers engage with evidence *in context* [emphasis added]” (p. 175). Context is provided by situated experience underpinned by personal experience and judgement (Wright et al., 2016). For PSAP leaders, evidence-based management may serve as the link between theory and practice.

In contrast, critics of evidence-based management warn that overreliance on certain forms of evidence as a panacea may not be in the public’s best interest (Boyes-Watson & Pranis, 2012; Morrell et al., 2015). First, in attempting to remove rubbish and other half-truths (Pfeffer & Sutton, 2006), evidence-based management theorists

denigrate other forms of knowing (Morrell & Learmonth, 2015; Morrell, Learmonth, & Heracleous, 2015). Second, scholars are concerned with “Who decides what constitutes evidence?”, “How can we know what we don’t know?”, and the dangers of policy-makers producing evidence to match the predetermined success of their decisions (McMillin, 2012; Morrell & Learmonth, 2015; Russell, 2012). Finally, critics question if “Does the solution work?” should be the sole criteria when society decides to adopt a solution. Ethical deliberations of “Should we do this?” need to enter the consciousness of decision-makers (Boyes-Watson & Pranis, 2012; McMillin, 2012), especially considering PSAP leaders’ ethical responsibilities to the public.

Although evidence-based management theorists prize randomized experimental evidence of “what works,” there are little empirical studies on the effectiveness of EBM (Briner & Walshe, 2014; Glaub et al., 2014; Morrell & Learmonth, 2015; Olola et al., 2016; Wright et al., 2016). Some empirical studies showed that evidence-based management processes may improve the quality of care provided by PSAPs in the areas of quality improvement programs (Bhave, 2014), research knowledge (Olola et al., 2016), medical protocols (Clawson et al., 2016), community leadership knowledge of evidence-based practices (Gloppen et al., 2016), and evidence-based practice implementations (Spiri & MacPhee, 2013; Wright et al., 2016). Interestingly, based on Kepes, Bennett, and McDaniel’s (2014) hierarchy of evidence, the studies that best represented evidenced based management ideals also fall within the lowest strata of “evidence.” This cognitive dissonance led Wright et al. (2016) to call upon evidence-based management leaders to open up the decision-making and evidence valuing process to narrative forms of

knowing. The research studies discussed above support possible application of evidence-based management process to PSAP leadership decisions.

Complementing current research into evidence-based management, the adoption of national standards of care fall into alignment with the principles of evidence-based theory and practice (Olola et al., 2016). Although limited scholarly study exists on the impact of quality management processes in a PSAP environment (Clawson, Cady, Martin, & Sinclair, 1998), other studies using evidence-based theory may provide unique insights into how the 9-1-1 community may close the research-practice gap to provide better quality decision-making and outcomes (Olola et al., 2016). Furthermore, approaching PSAP quality improvement reforms with an expectation that there are multiple valid sources of evidence and context may provide the best opportunities for organizational success (Briner & Walshe, 2014; Morrell & Learmonth, 2015; Wright et al., 2016). Qualitative research into how PSAP leaders perceive quality improvement programs, how they value different forms of evidence, and decision-making processes helps us better understand the applicability of evidence-based management to PSAPs.

Statement of Purpose

The study explores how NYS wireless PSAP leaders evaluated the quality of service telecommunicators provide to the public, what forms of evidence they used to justify their quality improvement programs, and whether existing national standards of care impacted their decisions. The study provides insight into what PSAP leaders perceived as barriers to achieving quality and what factors they believed contribute to quality. Finally, the study analyzes and discusses the rich content provided by PSAP leaders on these topics from an evidence-based management theoretical framework.

Research Questions

The study addresses the primary research question: How do NYS Wireless PSAP leaders support effective implementation of quality care? Four subordinate questions provide insights into PSAP leader perceptions regarding the primary question. (a) How do PSAP leaders measure performance based on their definition of quality? (b) How do PSAP leaders perceive factors related to quality improvement? (c) When do PSAP leaders believe evidence-based management theoretical frameworks, such as national standards of care, should supersede local and personal experience frameworks; when do they not? (d) How do PSAP leaders' views align with evidence-based management theory? The researcher performed guided discussions with focus groups consisting of former and existing wireless NYS PSAP leaders followed by directed content analysis (Hsieh & Shannon, 2005) to answer these research questions. This next section briefly discusses each question and potential weaknesses that impacted the result of the study.

Sub-question 1: How do NYS wireless PSAP leaders measure performance based on their definition of quality? The sub-question was primarily aimed at determining how PSAP leaders defined quality and what processes they used to measure quality at their center. Some PSAP leaders used quality improvement programs developed in accordance with national standards of care, others had a local program, whereas many considered the absence of complaints as quality. Understanding both similarities and, more importantly, variances in how PSAP leaders perceived quality help researchers understand the thought processes behind decisions regarding PSAP quality and inform national standard of care developers on what PSAP leaders believe is practical to measure. Understanding how PSAP leaders define quality also sets

boundaries for the primary research question, specifically what could be considered by PSAP leaders as “quality care.”

Sub-question 2: How do NYS wireless PSAP leaders perceive factors related to quality improvement? This sub-question identified which factors PSAP leaders believed were necessary for success, which factors were helpful but not necessary, and which factors acted as barriers when implementing and sustaining a quality improvement program in accordance with national standards of care. As discussed later in Chapter 2, there are some factors previously identified by research findings such as time (Bartlett & Francis-Smythe, 2016; Guo, Farnsworth, & Hermanson, 2015), trusted insiders (Walker, Whitener, Trupin, & Migliarini, 2015; Wright et al., 2016), or organizational culture (Olola et al., 2016; Spiri & MacPhee, 2013; Telep & Lum, 2014) that may influence the success or failure of evidence-based quality improvement programs. PSAP leader responses confirmed some of those same factors were present for PSAP standards implementations. As a result of this study, evidence-based management theorists have better evidence to support their theory. Despite general validation, some of the assumptions made by proponents of evidence-based management need rethinking and lack practicality given the lack of original research on PSAP operations. PSAP leader-identified factors help future researchers better understand the “support” and “implementation” portions of the primary research question.

Sub-question 3: Do PSAP leaders believe evidence-based management theoretical frameworks, such as national standards of care, should supersede local and personal experience frameworks? As discussed earlier in the introduction, PSAP operations, policies, procedures, and adoption of national standards of care are locally

derived decisions with limited influence by state or federal agencies. National standards of care have emerged due to technological changes, civil liabilities, and changing public expectations. This sub-question evaluated whether PSAP leaders perceived national standards of care, particularly those associated with quality improvement, as valid requirements or measurement instruments. PSAP leaders believed evidence-based national standards of care were relevant, however, if PSAP leaders also shared significant barriers such as time and cost preclude implementation. This study informs decision makers on additional actions needed to achieve better PSAP quality. This sub-question was strategically placed later in the focus group discussion to reinforce or break through the “quality of care” definitions previously established by PSAP leaders during sub-question 1.

Sub-question 4: How do NYS wireless PSAP leaders’ views align with evidence-based management theory? This question identified alignment between what PSAP leaders actually believe and what evidence-based management theorists propose. Evidence-based management theorists posit the divide between research and practice may be overcome through proper training and exposure (Briner & Walshe, 2014; Kepes, Bennett, & McDaniel, 2014; Rousseau, 2006). Some research indicates leaders may practice evidence-based management without realizing it or confound previously studied research evidence with professional expertise (Bartlett & Francis-Smythe, 2016). The answers to this sub-question exposed general agreement between theory and reality. PSAP leaders advocated better use of local data and more original research on PSAP operations to close the divide between theory and practice. Their comments revealed that gap is not too large to bridge within the current theoretical framework. Connecting back

to the primary research question, PSAP leaders remain central to the implementation of programs and also construct what is viewed as “effective” for their organizations.

Potential Significance of the Study

There is scant empirical research on evidence-based management decision-making (Wright et al., 2016), PSAP quality improvement (Clawson et al., 1998), or PSAP leaders as a population. The study provides new insight into how PSAP leaders make decisions regarding the quality of service PSAPs provide to the public. The study offers potential solutions to governments regarding which standards of care should be adopted, what measures best define quality, and what factors including staffing and funding may be necessary for success. Finally, the study assists our understanding of how a relatively new theory, evidence-based management (Pfeffer & Sutton, 2006; Rousseau, 2006), aligns with PSAP leaders’ reality.

Definitions of Terms

For the purpose of this study, a public safety answering point or PSAP is a “facility equipped and staffed to receive emergency and non-emergency public safety calls for service via telephone and other communication devices (APCO, 2015, p. 16). Also, a telecommunicator refers to anyone “whose primary responsibility is to receive, process, transmit, and/or dispatch emergency and non-emergency calls for service for . . . public safety services” (APCO, 2015, p. 16). Finally, a quality improvement program is defined as an “on-going program providing, at a minimum, the random case review evaluating emergency calltaking and dispatch performance, feedback on protocol compliance, commendation, retraining and remediation as appropriate, and submission of compliance data” to a PSAP (APCO, 2015, p. 17).

Chapter 1 Summary

9-1-1 is designed to preserve life and property. The PSAPs that answer the call have an established duty to provide quality public service, yet the definition of quality varies from state to state and community to community. As national standards of care emerged to meet public expectations PSAP decision makers in federal, state, and local governments face difficult choices along a continuum between mandating adherence to national standards and leaving quality improvement programmatic decisions solely to local control. Evidence-based management theory proposes decisions regarding practice are best informed by combining the best available research with local contextual data. While some research studies support evidence-based management processes and practices leading to better outcomes, there is little known about evidence-based management theory applicability to a PSAP environment or the perceptions of PSAP leaders regarding evidence-based quality improvement standards. This study answers specific questions about how PSAP leaders measure quality, what factors PSAP leaders perceive impact implementation of a quality improvement program, PSAP leader receptivity to evidence-based management standards superseding personal experience during decision-making processes regarding quality improvement, and how PSAP leaders' beliefs align with evidence-based theory.

Chapter 2: Review of the Literature

Literature Review Introduction and Purpose

Since its first use in 1968, 9-1-1 grew to be the primary emergency services number in the United States of America (NENA, n.d.-a). As previously discussed in Chapter 1, the quality of 9-1-1 services provided by telecommunicators can mean the difference between life and death (APCO, 2013a; DeLong v. County of Erie, 1982). In 2015, the 9-1-1 community adopted a national minimum standard of care related to quality improvement programs for the agencies that answer our 9-1-1 calls (APCO, 2015). Public Safety Answering Points (PSAP) are faced with multiple decisions regarding whether or not to adopt the national quality improvement standards of care and how to implement quality improvement measures within their organization. The information from quality improvement programs can be used as local evidence to support, refute, or even act as a research control for evidence-based practice within an evidence-based management theoretical framework.

The purpose of this literature review is to evaluate the current research related to evidence-based management implementation and quality improvement within a 9-1-1 environment. The review will initially discuss studies related to quality improvement programs from an evidence-based practice paradigm, and how researchers linked implementation of evidence-based practices to evidence-based management decision making. The review will then analyze significant research findings related to how evidence-based management implementation impacted, or was impacted by, individual roles and organizational perspectives. Next the review will discuss research-identified barriers to implementation and factors related to implementation success. The review

will close with a brief methodological review, identification of research gaps, and recommendations for further study.

Quality Improvement as Evidence-Based Practice and Management

Quality improvement can be an evidence-based practice or part of a larger evidence-based management implementation (Bhave, 2014; Clawson et al., 1998; Russell, 2012; Spector et al., 2015; Taylor & Campbell, 2011). The germinal study by Clawson et al. (1998) showed significant 20% ($n= 217, p < .001$) increase in evidence-based telecommunicator protocol compliance after initiation of quality improvement feedback sessions and continuing dispatch education (p. 3). At the time, Clawson et al. (1998) was the only peer reviewed study that quantitatively measured the impact of quality improvement in a PSAP environment.

Conducted nearly two decades ago, the 1998 Clawson et al. study served as a bedrock assumption for future studies related to evidence-based practices within a PSAP environment, such as those developed by the International Academies of Emergency Dispatch (IAED) and its precursor the National Academy of Emergency Medical Dispatch (Clawson et al., 2012). Shah, Bishop, Lerner, Czapranski, and Davis (2003) researched emergency telecommunicator protocols developed by the National Academy of Emergency Medical Dispatch and revealed telecommunicators who complied to academy accredited quality standards were able to differentiate between low acuity patients (needing less emergency intervention) from more critical patients 94.8% of the time thus reducing emergency response costs and reducing risk to the public from ambulances needlessly responding with lights and sirens (p. 3).

More recent evidence-based practice research on the effectiveness of stroke diagnostic tools (Clawson et al., 2016), telecommunicator call processing times for structure fire protocols (Dornseif et al., 2016), perceived value of differing PSAP training techniques (Sebresos, Olola, Scott, & Clawson, 2016), and effectiveness of telecommunicators pre-alerting dispatched agencies to suspected cardiac arrest (Weiser et al., 2013) specifically selected PSAPs that achieved, or were about to achieve, Accredited Center of Excellence status from the International Academies of Emergency Dispatch. The International Academies of Emergency Dispatch certify telecommunicators on the use of their evidence-based protocols, and more stringently certify PSAPs' quality improvement programs related to protocol compliance (International Academies of Emergency Dispatch [IAED], n.d.). PSAPs must demonstrate specific quality improvement parameters for telecommunicator protocol compliance, quality improvement program policies and procedures, and local quality improvement governance structures in order to achieve Accredited Center of Excellence status (IAED, n.d.; IAED, 2014). Researchers in the above studies controlled for adherence to the intervention or protocol being studied by using accredited PSAPs because researchers, and in particular, Dornseif et al. (2016) "didn't have the resources to review nearly 24,000 cases individually for compliance" (J. Dornseif, personal communication, March 15, 2017). For the researchers, PSAP accreditation and the quality improvement programs that justify accreditation increased the validity of their measurement tools for the protocols under study.

Similarly, an Accredited Center of Excellence PSAP served as the sample agency for a study investigating changes in telecommunicator interest, understanding, and

literacy of evidence-based research before and after watching a research education video (Olola et al., 2016). While the non-randomized cohort study revealed a significant post-intervention increase (52%, $p < .05$) in telecommunicators' abilities to differentiate between quantitative and qualitative research, the study also revealed only insignificant increases in telecommunicator interest in research participation (Olola et al., 2016, p.24). Olola et al. (2016) concluded the lack of increase in research participation was due to the fact that the sample had volunteered for research, therefore demonstrating their preexisting interest. Researchers also revealed the PSAP studied recently performed quality improvement related research and internal data-gathering for accreditation purposes (Olola et al., 2016). The PSAP's preexisting organizational commitment to quality and evidence-based practice was cited by Olola et al. (2016) as a study limitation and may have been linked to evidence based management implementation and interest in scholarly research.

Due to the limited availability of quality improvement and evidence-based management research directly tied to the PSAP environment (which is discussed later during the research gaps section), the subsequent portions of this review expanded the scope of inquiry to other fields of study. Peer reviewed research studies that specifically evaluated evidence-based management, the decision-making processes surrounding implementation of evidence-based practice, or management views of evidence-based practice were included. Studies with findings focused solely on the effectiveness of a particular evidence-based practice were excluded. The review also focused on studies related to quality improvement programs within call centers, but specifically excluded studies related to the quality of language adaptations of non-native call centers servicing

North American and United Kingdom based companies. The next sections will discuss how researchers uncovered linkages between evidence-based management and evidence-based practice, discoveries on how evidence-based management impacted or is impacted by differing roles and perspectives, findings concerning barriers to evidence-based management, and factors identified as promoting evidence-based management.

Evidence Based Practice Linkage to Evidence-Based Management

Researchers found that the decision processes surrounding the implementation of evidence-based or science-based practices may be inextricably linked to the evidence-based management process (Bartlett & Francis-Smythe, 2016; Briner & Walshe, 2014; Glaub et al., 2014; Guo et al., 2015; Spiri & MacPhee, 2013; Wright et al., 2016). Specifically, Wright et al. (2016) “identified the opportunity” to perform retroactive case study on evidence-based management decision-making process as part of a larger organizational study regarding the implementation of an evidence-based fast track program within the emergency department at a large metropolitan hospital in Australia (p. 163). While a majority of the Wright et al. (2016) case study’s findings are discussed elsewhere in this review, the fact that evidence-based management implementation themes and factors unintentionally emerged from the study of a different evidence-based phenomenon is significant and relevant to how researchers can study evidence-based management.

The apparent link between evidence-based practice and evidence-based management was supported in other study findings such as Spiri and MacPhee (2013) in which “participants frequently gave examples of EBM [evidence-based management] in relation to EBP [evidence-based practice]” (p. 268) and Taylor and Campbell (2011)

where 63% of social care workers thought that social care governance, a Northern Ireland government sanctioned form of evidence-based management, was a “valuable process to ensure quality of service and continuous improvement” (p. 263). A management student participant in Briner and Walshe’s (2014) case study of evidence-based management teaching stated, “I’m a lot more aware of the need for me to be quality control for the research I use in the course of decision making” (p. 428). The linkage and overlaps described in the above studies may help future researchers or literature reviewers uncover evidence-based management when evaluating the decisions surrounding evidence-based practice.

Evidence-Based Management Implementation Findings from Multiple Perspectives

Research into evidence-based management implementation or decision processes surrounding evidence-based practice revealed roles and organizational culture influenced whether or not evidence-based management succeeded (Glaub et al., 2014; Wright et al., 2016), what evidence-based practice was ultimately selected (Bartlett & Francis-Smythe, 2016; Telep & Lum, 2014; Walker et al., 2015), and the level of evidence-based practice sustainment achieved by such decisions (Crowley, Greenberg, Feinberg, Spoth, & Redmond, 2012; Gloppen et al., 2016). The subsections below discuss what the studies found related to senior management and owners, middle management and first-line supervisors, trusted insiders, and external facilitators. Another subsection evaluates how researchers found organizational culture as a neither a barrier nor a factor for success but rather as a decision-making modifier.

Senior leadership and owners. Senior leadership and owners may have differing views or roles in evidence-based management depending on the size of their organization

(Crowley et al., 2012; Glaub et al., 2014; Guo et al., 2015; Telep & Lum, 2014). Senior leaders from larger organizations have less time to “keep themselves updated on . . . research findings” (Guo et al., 2015, p. 281). Although time is discussed at greater length below, the fact that senior hospital administrators surveyed in Idaho cited lack of time as the primary barrier to evidence-based management (Guo et al., 2015) suggested that senior leadership in larger organizations may not be directly involved in either evidence-based management or evidence-based practice implementations, and was reinforced by findings from other studies (Crowley et al., 2012; Spiri & MacPhee, 2013; Wright et al., 2016). Quotes from senior leaders of larger organizations such as “ask the local school counselor” (Crowley et al., 2012, p. 100) or those in middle management looking up stating “the leader needs to evaluate all possible actions—not fire off a solution” (Spiri & MacPhee, 2013, p. 270) indicated senior management may be aware of evidence-based management principles, but not always directly engaged.

In contrast, smaller organizations with engaged leaders may have greater success bridging the research-practice gap and permeating views on evidence-based management within their organization (Glaub et al., 2014; Telep & Lum, 2014). Glaub et al. (2014) discovered Ugandan small business owners employing evidence-based management showed significant differences in gross sales revenues (Hotelling’s $t = 7.20, p < .01, \eta^2 = .07$) and employee growth (Hotelling’s $t = 7.16, p < .05, \eta^2 = .07$) between the randomly selected test group and waiting control group (p. 370). The test group showed increases in all measured areas of success during the 12 month longitudinal study, whereas the control group had decreases in gross sales and employees with five businesses failing (Glaub et al., 2014).

Similarly, a survey of officers in three different sized agencies showed greater familiarity with the term “evidence-based policing” in the smallest of the agencies (48.4%) as opposed to the largest agency (25.1%) surveyed (Telep & Lum 2014, p. 367). The researchers concluded that the variance between the agencies may be due to the progressive chief of the smaller organization “who actively advocated for crime-analysis and evidence-based policing” (Telep & Lum’s 2014, p. 367). While not conclusive, the literature points to differences in organizational size, senior leadership engagement, and organizational distance between the decision maker and primary implementer as potential factors to evidence-based management success.

Middle management and first-line supervisors. Middle managers and first-line supervisors serve as the primary implementers, initial quality control, and sustainers of evidence-based practices through evidence-based management (Armstrong, 2012; Bhave, 2014; Spector et al., 2015). Armstrong (2012) found first-line supervisors were “actively involved in leadership activities including strategic planning, data evaluation, making decisions from a ‘big picture’ perspective as well as enhanced supervision activities” (p. 435) while evaluating probation and community supervision personnel’s perceptions on span of control or “the number of individuals, or resources, that a person can effectively supervise” (p. 429). Bhave (2014) showed that supervisory use of electronic performance monitoring of calls at a U.S. based customer service call center was positively, though weakly, related to task performance ($r = .18, p < .05$) and organizational citizenship behaviors ($r = .23, p < .05$) while the call quality coefficient estimate ($b = 2.97, p < .05, \beta = .53$) was positive and statistically significant (p. 624). Likewise, a study on nursing transition programs across three states found significant differences (all studies set alpha

at 5%) between non-established and established transition programs with dedicated nurse preceptors (Spector et al., 2015). Established programs with dedicated nurse preceptors had the lowest patient errors and new nurse turnover, while also having the highest job satisfaction over the course of the first year after leaving nursing school (Spector et al., 2015, pp. 21-22).

Other research studies reinforced that middle managers and first-line supervisors act as both users and creators of evidence critical to evidence-based management and quality improvement implementations. Interestingly, Bhave (2014) found the opposite result than expected regarding organizational citizenship behavior. Bhave (2014) anticipated a negative relationship between supervisory use of evidence-based quality assurance monitoring and employee attitudes regarding work quality. Instead, use of quality assurance monitoring reinforced supervisory perceptions of good employees, however Bhave (2014) cautioned this may be halo error where supervisors “assume a singular performance dimension to classify subordinates as either ‘good’ or ‘bad’” (p. 628). One senior administration participant of the Armstrong (2012) study “adamantly claimed that the success of the jurisdiction’s probation department was *dependent* on their first-line supervisors” (p. 435), while other participants noted that evidence-based practice supervisors focused on “producing *quality* outcomes” for community supervised clients (p. 435). Wright et al. (2016) described how the primary implementer of a fast-track program, Dr. Clancy, provided “executive summaries of the literature in pamphlet form” to promote evidence-based discussion (p. 169).

Contrastingly, Russell (2012) found telenursing managers in Australia failed to provide clear guidance while creating a false dichotomy between professional experience

and using evidence-based computer decision support software. “It’s almost like they contradict themselves and say, ‘Yes use your clinical judgement but then no you’ve got to stick to the algorithms’” (Russell, 2012, p. 202). Russell (2012) found this vacillation created opportunities for counterproductive work behaviors where nurses actively manipulated the algorithm to achieve the desired clinical outcome. The studies from different scholarly disciplines and multiple populations may denote first-line supervisors can have a dramatic impact on evidence-based management implementation.

Trusted insiders. Remarkably, the concept of a trusted insider as implementer also emerged from the literature with the term specifically used by Wright et al. (2016, p. 171). Participants shared that “one of our own people” (Wright et al., 2016, p. 171) or someone having “credibility within the tribe” (Walker et al., 2015, p. 33) was necessary for evidence-based management success in the former and evidence-based practice adoption in the latter studies. When considering resources for decision-making, hospital administrators preferred local organizational data and information from “colleagues and peers,” over professional websites, journals, and databases (Guo et al., 2015, p. 279). Some organizations may actually exclude the input of others because, as a telecommunicator participant in a study related to the emotional labor of PSAP workers put it, “not everyone can do our job” (Shuler & Sypher, 2000, p. 75).

While evidence-based management may be seen as having intrinsic value, the decisive factor in implementation may be who is actually promoting the practice. For instance, researchers studying what evidence-based management meant to Brazilian senior nurse administrators used the following quote as support a “skilled team leader or manager” was necessary for evidence-based management success: “I emphasize that the

techniques and methods, such as using sepsis bundles (example of EBP [evidence-based practice]), are useful, but the key is the leader who involves her multidisciplinary team” (Spiri & MacPhee, 2013, p. 269). Likewise, trust in the messenger was a major theme of the Wright et al. (2016) case study surrounding, Dr. Clancy:

He blows me away. He puts up the data and the equations and the mathematics. . . . If he’s put that much thought and that much process and that much passion into it then I’d be horrified to think anyone would disagree. (p. 171)

As shown in the quotes above, trust was earned by the implementer through a variety of persuasive methods including empirical, personal, and not yet discussed, political. Going back to Wright et al. (2016), Dr. Clancy was “given the mandate by the team” because of the organizational crisis of solving the fast-track problem in the emergency department (p.167). Similarly, a police department with a chief espousing evidence-based values showed 81.0% of police officers thought hot spot policing, a research proven evidence-based practice, was effective at stopping crime as opposed to the 3.5% officer endorsement of hot spot policing from a larger police organization without engaged leadership (Telep & Lum, 2014, p. 371). In each study discussed, the trusted insider was imbued with the political power by key stakeholders to enact the evidence-based practice.

External facilitators. External facilitators, whom for the purpose of this review includes consultants, organizational psychologists, technical assistants, or other perceived non-member individuals, may have an additional challenge when helping organizations implement evidence-based management or a particular evidence-based practice because they must overcome the immediate hurdle of trust. While trust building and brokering

trust are not within the scope of this review, it is important to note reactions from leaders and stakeholders regarding external facilitators. Guo et al. (2015) found hospital administrators surveyed in Idaho turned to external consultants last when “facing major decision-making in their health care organizations” (p. 279). More poignantly, a senior health care executive in Australia bluntly said, “I’m not a big fan of management consultants” (Wright et al., 2016, p. 167). The above sentiments from different studies of similar populations on opposite sides of the planet may explain why similar organizational changes were rejected when presented formally by external facilitators but accepted when proposed by a trusted insider (Guo et al., 2015; Wright et al., 2016).

External facilitators such as organizational psychologists may even temper their recommendations or even the research language used to justify the proposed evidence-based practice in order to meet client expectations (Bartlett & Francis-Smythe, 2016). Bartlett and Francis-Smythe (2016) found “concerns around client demands and acceptability to the client are more frequently considered than evidence from the scientific research literature (p. 621). While 79.1% of United Kingdom organizational psychologist participants encouraged clients to focus on the importance of evidence, interestingly “both personal experience and professional expertise also appeared to supersede scientific research evidence” (Bartlett & Francis-Smythe, 2016, p.622). While initially contradictory, Bartlett and Francis-Smythe’s (2016) interview data indicated that their participants may have confounded the differences between previously studied scientific research evidence with current personal knowledge and professional experience, “it’s like so old and so ingrained now . . . it’s a methodology really” (p. 623). The above findings are not surprising considering external facilitators are hired for their

subject matter expertise, but the above revelations may reflect areas for further study and consideration when evaluating how evidence is perceived.

The purpose of external facilitators, however, is to impart knowledge and expertise on the organization or community so leaders and managers can implement and sustain evidence-based management (Bartlett & Francis-Smythe, 2016; Crowley et al., 2012). Two separate studies from competing community programs aimed at reducing youth substance abuse, PROSPER (Crowley et al., 2012) and Communities that Care (Gloppen et al., 2016), evaluated how long-term external facilitators impacted community knowledge of evidence based-practices. Both multiyear longitudinal studies, using paired randomized communities, revealed leaders of communities receiving external facilitator support had greater evidence-based program adoption and community leader knowledge of evidence-based practices than their control community counterparts years after external facilitator financial support was withdrawn (Crowley et al., 2012; Gloppen et al., 2016). In the case of the two studies above, long-term support resulted in long-term improvements in evidence-based management knowledge and expertise. Yet, looking deeper, future research needs to determine if the two studies described above were more than self-congratulatory advertisements as opposed to identifying generalizable factors for evidence-based management implementation success.

Organizational culture. Organizational culture matters. Research findings indicated organizational culture can be a barrier (Russell, 2012; Taylor & Campbell, 2011; Telep & Lum, 2014) or facilitator (Olola et al., 2016; Spiri & MacPhee, 2013) when implementing evidence-based management. Organizational culture also consistently appeared as a discriminator when evidence-based practices are selected

(Bartlett & Francis-Smythe, 2016; Crowley et al., 2012; Walker et al., 2015).

Organizational culture may also change as a result of evidence-based management (Gloppen et al., 2016; Spiri & MacPhee, 2013). The next section explores research findings in each of these cases and the moderating impact organizational culture plays.

Organizational culture can be a barrier to evidence-based management.

Researchers found when leadership fails to guide employees regarding the proper balance between evidence-based practice (e.g., using the algorithm) and professional experience (e.g., use your clinical judgment), the resulting counterproductive work behaviors may confound the decision-making process surrounding the implementation of an evidence-based practice (Russell, 2012). Russell (2012) noted how the use of software algorithms and focusing on a single chief complaint “militates against the more holistic practices that nurses advocate (p.202). More concerning, if the locally derived data is unsound because employees are purposely manipulating the system, the subsequent managerial decisions regarding the effectiveness of a particular intervention, algorithm sequencing, or even decisions related to which software to select, then become fruit of the poisoned tree. As revealed by the Russell (2012) study, the inability of nurses and managers to solve this incongruence of professional culture and risk management became a self-defeating echo chamber of espoused values versus administrative control.

Likewise, organizational cultures regarding internal subgroups can also act as barriers to evidence-based management. If two internal groups do not trust each other, locally derived data used to inform the effectiveness, or more importantly the ineffectiveness, of a particular practice may be ignored or disregarded as unreliable. Telep and Lum, (2014), specifically cited the “cultural divide” between police officers

and their civilian crime analysts as a potential barrier to officer's receptivity of evidence-based practice (p. 363). Guo et al. (2015) also found hospital administrators and doctors regularly used in-house hospital librarians to help research clinical approaches to patient care but failed to engage hospital librarians' assistance when making managerial decisions. Guo et al. (2015) represented one of the few reviewed studies where evidence-based practice decisions were divorced from evidence-based management decisions while simultaneously speaking to how culture defines internal roles within organizations and how those roles influence evidence-based management implementation.

Conversely, organizational culture can facilitate or even accelerate how evidence-based managers implement and develop evidence-based practice. Spiri and MacPhee's (2013) phenomenological study revealed when a hospital's "culture endorses quality and safety standards, and the quality / safety culture is reflected in organizational services, practices, and policies," evidence-based management has fertile soil for growth (p. 269). Olola et al. (2016) found the culture of an organization that was "already adhering to the field's accepted best practices . . . and regular, standardized review of emergency calls" (p. 230) may have contributed to the telecommunicators high interest in PSAP specific research prior to the intervention. Developing a "culture of research" is critical to the advancement of new evidence-based practices and management techniques, and organizations who come predisposed towards research may have an advantage when it comes to implementation (Olola et al., 2016).

Organizational culture discriminates what evidence-based practices are "acceptable" (Bartlett & Francis-Smythe, 2016, p. 615). In their grounded theory study with Native American community leaders, Walker, Whitener, Trupin, and Migliarini

(2015) found participants strongly favored evidence-based programs “when there was a perception that family tradition and culture was valued and could be incorporated into the curriculum and implementation process” and when “alignment with cultural values” could be achieved (p. 33). Bartlett and Francis-Smythe (2016) discovered organizational psychologists would “fit the research . . . around a consideration of the particular ways in which a concept had been theorized (and operationalized) in the research literature vis-à-vis the way in which it manifested itself in the ‘situated context’ of practice” (p. 624). Crowley et al. (2012) revealed community leaders “reported selecting effective programs that had adequate organizational or participant fit (*‘right program for our kids’*) as a method believed to maintain program fidelity” (p. 101). The above studies illustrated why matching the correct evidence-based practice to the organizational culture is a core function of evidence-based management and may determine success or failure.

Barriers to Evidence-Based Management Implementation

Failures occur, despite having the best available evidence to support a decision, practice, or organizational change. Perhaps the research was not the correct fit for the organization or the correct research was incorrectly applied (Bartlett & Francis-Smythe, 2016; Briner & Walshe, 2014; Crowley et al., 2012; Russell, 2012). Perhaps the incorrect person or agency, who lacked trust and political mandates attempted to force an evidence-based solution (Wright et al., 2016). Or, perhaps senior leadership was unconvinced the organizational changes were worth the time and costs associated with evidence-based management implementation (Guo et al., 2015; Spiri & MacPhee, 2013). The next section will cover specific research-identified barriers to evidence-based management implementation. Barriers such as lack of training, research skills, and

access to scholarly research may be overcome with a medium level of effort.

Contrariwise, barriers such as time and costs may represent significant barriers requiring dedicated planning and resources to overcome.

Lack of evidence-based management training. Evidence-based management requires not only initial awareness but also management support for continuing training. Armstrong's (2012) participants noted that evidence-based management "requires significant supervisor-officer interaction, ongoing training, feedback, as well as quality assurance to master these skills" (p. 442). Among hospital administrators, Guo et al. (2015) discovered "lack of training" as the second most prevalent barrier to evidence-based management (p. 280). Taylor and Campbell (2011) found over 40% of Northern Ireland social workers "regarded themselves as having little or no knowledge about SCG [social care governance]," the state-sponsored evidence-based model for social work (p.262). As discussed earlier, managers may already be employing evidence-based management without realizing they are doing it (Bartlett & Francis-Smythe, 2016; Taylor & Campbell, 2011), but specific training is also necessary for proper evidence-based management implementation (Briner & Walshe, 2014).

Lack of training and exposure to evidence-based management may be a common barrier to evidence-based management, but it may not require significant effort to surmount. Evidence-based management training can have significant impacts on leaders' long-term evidence-based practice awareness, planning, internal data collection, program selection, and program fidelity practices (Briner & Walshe, 2014; Crowley et al., 2012; Glaub et al., 2014; Gloppen et al., 2016; Taylor & Campbell, 2011). More specifically, Gloppen et al. (2016) found, in a randomized experiment, community leaders receiving

training had a “four times greater odds of reporting a one-stage higher level of adoption than control key leaders” (p. 85). As previously discussed, Glaub et al. (2014) showed small business owners who received evidence-based management training had better business results as opposed to those in the waiting control group. The studies highlighted not only that training may have a positive impact on outcomes, but training may also be the difference between organizational or community leaders’ perceptions of scholarly research.

Lack of research skills. Evidence-based management theory espouses that the best decisions come from the best evidence (Kepes et al., 2014; Pfeffer & Sutton, 2006; Rousseau, 2006). The best evidence from research studies means nothing if managers do not know the research exists, cannot find it, or evaluate its worth respective to the body of knowledge (Bartlett & Francis-Smythe, 2016; Guo et al., 2015; Olola et al., 2016). Lack of research appraisal and search skills was listed by Guo et al. (2015) as the fifth and sixth most prevalent barriers respectively to evidence-based management among surveyed Idaho hospital administrators (p. 280). Similarly, difficulty finding relevant evidence was the third most prevalent barrier to research study utilization identified by interviewed organizational psychologists (Bartlett & Francis-Smythe, 2016, p. 625).

Again, managers can overcome lack of search and appraisal skills with moderate effort. Briner and Walshe (2014) described in great detail how managers successfully incorporated rapid evidence assessment into their professional work lives with a moderate level of effort over eleven sessions lasting three hours each. Another research identified option was to use people within the organization, such as hospital librarians, who had expertise in scholarly database searches to assist in the research process (Guo et

al., 2015). Crowley et al. (2012) found, in a random trial, community leaders who received research training had better standards of evidence evaluation skills than those in control communities, $F(3, 707) = 3.12, p < .05$ (p. 103). Regardless of the methods used by managers, being able to successfully find, evaluate, and appropriately apply research to the given organizational situation appeared critical to closing the research-practice gap (Briner & Walshe, 2014; Glaub et al., 2014; Taylor & Campbell, 2011).

Lack of access to scholarly research. Access to research in the information age may not seem like a barrier, but knowledge is not always free (Bartlett & Francis-Smythe, 2016). Guo et al. (2015), and, more recently, Bartlett and Francis-Smythe (2016) identified lack of access to information as a barrier to evidence-based management implementation. Bartlett & Francis-Smythe (2016) specifically cited “full access to the research literature is usually via gate-keepered, subscription-based services” (p. 625). Managers seeking research related to their organizational decisions may reach such gates, find them locked, and either seek counsel elsewhere or give up the inquiry entirely.

Once more again, this barrier may be overcome by managers with a moderate level of effort. Researchers discovered managers accessed research literature using public or education-based library services (Briner & Walshe, 2014) and in-house organizational staff with professional subscriptions (Guo et al., 2015). Bartlett and Francis-Smythe (2016) indicated managers can overcome lack of access by just asking for help from peers or contacts with access. All the above methods overcame short-term access requirements to research the literature. If there was a longstanding need for continual access, managers also subscribed to field-specific web services providing

access to peer review or programmatically vetted research materials (Crowley et al., 2012; Gloppen et al., 2016). The studies above showed how resilient managers worked around the access barrier.

Time as a barrier. Time is a non-renewable resource. For managers, once it is expended, it can never be recovered. This may be the reason why researchers found lack of time among the top barriers or concerns for evidence-based management implementation (Bartlett & Francis-Smythe, 2016; Guo et al., 2015). It takes time to find and evaluate the research literature (Bartlett & Francis-Smythe, 2016; Briner & Walshe, 2014; Guo et al., 2015; Taylor & Campbell, 2011). It takes time to convince senior leadership and key stakeholders to adopt a particular evidence-based practice (Spiri & MacPhee, 2013; Taylor & Campbell, 2011; Wright et al., 2016) and then implement a given evidence-based program (Walker et al., 2015). It takes time to perform (Spiri & MacPhee, 2013), evaluate performance (Bhave, 2014), or supervise evidence-based practices (Armstrong, 2012; Taylor & Campbell, 2011). Most importantly, it takes a longer time, and with that patience, to study and understand the long-term benefits of such evidence-based management decisions (Crowley et al., 2012; Glaub et al., 2014; Gloppen et al., 2016; Spector et al., 2015).

Time is not a barrier that managers overcame with little effort; rather, research showed effective evidence-based management implementations required planning for the time commitments inherent to the evidence-based process (Armstrong, 2012; Bhave, 2014). More specifically, Armstrong (2012) found participants believed first-line supervisors needed more time for direct observation, data entry, data analysis, and quality improvement assessments as part of a larger evidence-based management model. To

account for the increased demand on supervisors' time, organizations needed to closely evaluate the proper span of control, or ratio, of first-line supervisors to probation officers or community supervision staff (Armstrong; 2012).

Similarly, Bhave (2014) showed time between electronic performance monitoring assessments was “negatively related to task performance, $b = -.04$, $p < .05$, $\beta = -.04$ ” when controlled for the initial levels of customer service representative performance at the previous assessment period (p. 616). Bhave (2014) and Armstrong (2012) suggested supervisors needed more frequent meetings with subordinates to discuss assessments if they wanted task performance improvement, thus supporting the view that evidence-based management necessitated strategic planning for time requirements. For the studies above, time translated to a human resource capital expenditure.

Cost as a barrier. The primary goal of evidence-based management is to make better decisions consequently improving quality, reducing waste, avoiding costly mistakes, and capitalizing on opportunities (Rousseau, 2006). However, there are costs associated with evidence-based management in terms of fiscal (Crowley et al., 2012; Gloppen et al., 2016), human (Armstrong, 2012; Briner & Walshe, 2014; Guo et al., 2015), and political capital (Taylor & Campbell, 2011; Wright et al., 2016). For both PROSPER (Crowley et al., 2012) and Communities that Care (Gloppen et al., 2016) programs, communities received grant funding to pay technical assistants to administer the evidence-based youth substance abuse programs and assist leaders in their evidence-based training. Once grant funding ended, communities had to find other sources of revenue to sustain the program such as other grants or raised the funds locally (Crowley et al., 2012). As previously mentioned in the section above, evidence-based practice

seemingly required more time and attention from first-line supervisors to sustain and effectively monitor performance which may translate to greater human capital needs (Armstrong, 2012). There is also political risk and cost associated with implementing evidence-based management, especially if one particular individual is given the mandate to fix the problem as was the situation described in the Wright et al. (2016) study.

Not all costs associated with evidence-based management decisions translated to immediate returns on investment. While Ugandan small business owners saw fiscal returns on their investment in the relatively short period of 12 months (Glaub et al., 2014), it took years for the benefits of youth substance abuse programs to be known (Crowley et al., 2012; Gloppen et al., 2016). Some studies showed no fiscal returns at all due the public service nature of the subjects or participants studied such as social work (Taylor & Campbell, 2011), police services (Telep & Lum, 2014), or PSAP services (Clawson et al., 1998; Weiser et al., 2013).

More importantly, managers who incorrectly apply evidence-based measures, such as medical algorithm software for telenursing call centers, can have the opposite in intended consequences (Russell, 2012). The long-term costs and commitments required may cause leaders to shy away from particular evidence-based management interventions (Bartlett & Francis-Smythe, 2016; Guo et al., 2015; Walker et al., 2015). Evidence-based leaders, therefore, must build consensus that the researched and identified costs associated with evidence-based management are worth the benefit to the organization.

Factors of Successful Evidence-Based Management Implementation

Evidence-based management success not only requires managers to overcome barriers, but managers and leaders must also engage in some proactive ventures. Studies

showed successful evidence-based management implementations had managers or leaders that took the current empirical research and adapted the findings to their unique situation (Glaub et al., 2014; Spiri & MacPhee, 2013; Wright et al., 2016). The studies also highlighted the need for stakeholder engagement (Russell, 2012; Spiri & MacPhee, 2013). Another factor studies considered was the impact of accreditation as a positive modifier for evidence-based management success (Clawson et al., 1998; Olola et al., 2016; Spector et al., 2015; Spiri & MacPhee, 2013). The next section will discuss some of the factors identified within the available research literature that may facilitate successful evidence-based management implementation.

Local adaptation. Evidence-based management theory encourages managers and leaders to close the research –practice gap (Rousseau, 2006), yet the research may not directly align to the current local context or problem set (Bartlett & Francis-Smythe, 2016; Briner & Walshe, 2014; Guo et al., 2015; Spiri & MacPhee, 2013). Lack of research skills was previously identified as a barrier for managers (Briner & Walshe, 2014; Guo et al., 2015), but sometimes the relevant research either does not exist (Bartlett & Francis-Smythe, 2016) or time constraints prevent its discovery (Telep & Lum, 2014). Sometimes the available research in a given field, such as law enforcement, was so overwhelming leaders had difficulty sorting through the findings and appropriately applying the research to their local context (Taylor & Campbell, 2011; Telep & Lum, 2014).

Across different continents, cultures, languages, and scholarly disciplines, study findings highlighted the importance of local adaptation for evidence-based management. Managers and leaders who translated the best available research to their situation

perceived a greater sense of self-efficacy and confidence in their approach to evidence-based management implementation (Bartlett & Francis-Smythe, 2016; Walker et al., 2015; Wright et al., 2016). A senior nurse administrator in Brazil described “what facilitates the management process is to relate scientific evidence with the institutional reality” (Spiri & MacPhee, 2013, p. 268). More recently, Walker et al. (2015) Native American participants specifically cited “flexibility for individual adaptation was the most viable strategy” for evidence-based implementation success (p. 34).

Likewise, according to one United Kingdom organizational psychologist participant “what occupational psychologists get is really good quality supervision so that they understand this whole, how you do evidence-based practice *in situ*” (Bartlett & Francis-Smythe, 2016, p. 624). More explicitly, the primary subject of the Wright et al. (2016) study, Dr. Clancy, stated “I was also quick to acknowledge the fact that I had adapted a lot of other people’s ideas just to develop an understanding of why it hadn’t worked the first time.” (p.166). Adaptability consistently emerged as a major theme for the studies above, leading researchers to surmise local adaptation was a major factor in evidence-based management success.

Key stakeholder engagement. Evidence-based management theory explicitly identifies key stakeholder participation as a major component for success (Rousseau, 2006; Rousseau & Olivas-Luján, 2013; Minjina, 2015). Researchers found leaders and managers who actively engage key stakeholders within the organization may have a better chance at successfully implementing organizational changes (Armstrong, 2012; Gloppen et al., 2016; Spiri & MacPhee, 2013; Telep & Lum, 2014; Walker et al., 2015; Wright et al., 2016). Whether engaging senior leadership or building impetus from the

ground up, studies showed garnering support was a necessary process for evidence-based implementation, especially when overcoming, or more pronouncedly failing to overcome, resistance to change (Russell, 2012; Spiri & MacPhee, 2013; Wright et al., 2016). The next section will briefly cover engagement of employees who are expected to perform the changes and senior leaders who make decisions regarding organizational change.

Leaders need followers; otherwise they are not leaders but lone actors with a message no one is listening to. Studies specifically distinguished the importance of engaging and educating front line personnel in order to implement evidence-based management decisions including but not limited to: law enforcement officers (Armstrong, 2012; Telep & Lum, 2014), social workers (Taylor & Campbell, 2011), medical professionals (Russell, 2012; Spector et al., 2015; Spiri & MacPhee, 2013; Wright et al., 2016), call center employees (Bhave, 2014), and more specifically tailored to the PSAP community, telecommunicators (Clawson et al., 1998; Olola et al., 2016; Weiser et al., 2013). In their rich depiction of evidence-based management in action, Wright et al. (2016) offered multiple participant examples of stakeholder engagement including accounts such as: “Clancy didn’t just come to us with an idea. He came to us with an idea and all the data that supported it.” and “Clancy had the input of nursing staff and had to engage them because it made a difference to how they practised” (p. 166). In this way, those impacted by evidence-based management have the power to accept or sometime subvert (Russell, 2012) the process.

Just as important as followers, if senior leadership does not trust the messenger or is not convinced of the cost-benefit argument, both internal and external advocates will not receive the approval to move forward (Bartlett & Francis-Smythe, 2016; Crowley et

al., 2012; Gloppen et al., 2016; Taylor & Campbell, 2011; Telep & Lum, 2014; Walker et al., 2015). As previously discussed, senior leadership can either act as a hindrance (Russell, 2012; Spiri & MacPhee, 2013) or a facilitator (Glaub et al., 2014; Telep & Lum, 2014) for evidence-based management. The research literature indicated senior leadership may be more neutral in their views of evidence-based management than particularly skewed either positively or negatively (Crowley et al., 2012; Gloppen et al., 2016; Guo et al., 2015), however such conclusions require additional studies into the baseline or pre-implementation viewpoint of senior leaders without the potential conflict of promoting a particular program.

Accreditation as a moderator. As previously discussed at length, PSAP accreditation seemed to positively moderate acceptance or implementation of evidence-based management (Clawson et al., 2016; Dornseif et al., 2016; Sebresos et al., 2016; Shah et al., 2003; Weiser et al., 2013). Studies from other fields also suggested the importance of accreditation or membership in a professional association (Armstrong, 2012; Spector et al., 2015; Spiri & MacPhee, 2013; Taylor & Campbell, 2011). One of the most explicit, non-PSAP, contributions came from Spiri and MacPhee (2013) whose study specifically evaluated the impact of accreditation on evidence-based management implementation among hospitals in Brazil. More specifically, a senior nurse participant stated:

EBP [evidence-based practice] is facilitated within an accredited institution because of the accreditation process—this means that leaders must seek new knowledge and collaborate with professionals, such as multidisciplinary team

interactions, to address policy related to patient safety care. (Spiri & MacPhee, 2013, p. 269)

Research to date has not identified accreditation as an indicator or prerequisite of evidence-based management, but research appeared to support accreditation as a positive moderator.

Methodological Review

The literature reviewed was overwhelmingly quantitative, nearly two to one, which is not surprising given the influence of empiricist and positivist paradigms on evidence-based management theory that both proponents and critics agree on (Kepes et al., 2014; Morrell et al., 2015; Rousseau & Olivas-Luján, 2013). The quantitative studies focused largely on the effectiveness of a given evidence-based approach, such as the Clawson et al. (1998) germinal study, or the depth of evidence-based understanding among their studied populations, such as Taylor and Campbell (2011) and Telep and Lum (2014). Complementarily, the qualitative and mixed method studies, particularly those of Bartlett and Francis-Smythe (2016), Spiri and MacPhee (2013), and Wright et al. (2016), provided rich insights into both barriers and factors of evidence-based management implementation using the words of their participants. The next sections will briefly describe the strategies of inquiry used by researchers within their chosen methodologies and analyze their contribution to the overall understanding of evidence-based management implementation.

Quantitative strategies of inquiry. As stated above, a majority of the reviewed studies utilized quantitative methodologies to answer their research questions.

Hypothesis regarding the effectiveness of specific evidence-based practices were tested

primarily using either correlations (Bhave, 2014; Clawson et al., 2016; Shah et al., 2003; Spector et al., 2015) or comparisons of means after experimental interventions (Clawson et al., 1998; Glaub et al., 2014; Gloppen et al., 2016; Olola et al., 2016). The randomized studies performed by Glaub et al. (2014), and Gloppen et al. (2016) deserve greater emphasis as they specifically showed positive results, thus establishing cause and effect, due to evidence-based management interventions. Although discussed later in the mixed method section below, the quantitative portion of the Crowley et al. (2012) study also used randomized test and control communities to highlight the significant differences between communities using evidence-based management and those which did not. For proponents of evidence-based management theory, randomized experiments represent the gold standard of evidence for managers to use when making decisions. A concrete example of this positivist pyramid of evidence can be found in Kepes et al. (2014, p. 454).

To a lesser extent, researchers tested hypothesis, specifically those concerned with telecommunicator processing times, with median tests (Dornseif et al., 2016; Weiser et al., 2013). Prevalence studies categorized qualitative survey responses regarding perceptions of evidence-based management into quantifiable metrics focused on topics such as types of evidence and barriers (Guo et al., 2015), training techniques (Sebresos et al., 2016), or receptivity of first-line practitioners (Taylor & Campbell, 2011; Telep & Lum, 2014). Overall the literature was well balanced across quantitative strategies of inquiry.

Qualitative strategies of inquiry. Interestingly, the most convincing evidence regarding how evidence-based management implementation developed within observed

contexts came from qualitative studies. Spiri and MacPhee, (2013) cited Brazilian phenomenologist Martins' (1992) coding approach with "three main research components: description, reduction, and comprehension" to assign "units of meaning to subthemes and themes" (p. 267). Although the only phenomenological study reviewed, it contained some of the richest content among the purely qualitative studies. Case studies represented about half of the qualitative strategies of inquiries reviewed (Briner & Walshe, 2014; Russell, 2012; Shuler & Sypher, 2000), with Wright et al. (2016) deserving special mention for its detailed description of cross-checking informants, triangulation using archival documents, and the multiple iterative waves of open coding followed by recoding "related to the importance of a 'fit' between the organizational context of the decision process and the decision-maker's personal characteristics" (p. 165). Finally, grounded theory accounted for half of the strategies of inquiry used (Armstrong, 2012; Walker et al., 2015) when also including the qualitative portions of the mixed method studies discussed in the next section. While Armstrong (2012) provided no insight into how analysis was performed, Walker et al. (2015) described in great detail how researchers utilized both open and axial coding followed by participant review for accuracy.

Mixed method strategies of inquiry. As previously discussed, the qualitative portions of both mixed method studies utilized grounded theory as the chosen strategy of inquiry but differed in both the order of when quantitative analysis was applied and what quantitative strategies were used. Crowley et al. (2012) performed the qualitative analysis to establish four quantifiable domains for further multi-level ANOVA means testing between randomized control and test communities. Conversely, Bartlett and

Francis-Smythe (2016) performed the quantitative prevalence survey analysis regarding types of evidence used, then interviewed participants for further clarification and exploration on codes initially developed from the survey data. After interviews, Bartlett and Francis-Smythe, (2016) described an exhaustive and methodologically rigorous coding process to develop three abstract “parent nodes” (p. 619). Both studies provided detailed accounts of their analysis processes and interrater reliability, and both contributed significant findings as part of this review.

Substantive Gaps and Recommendations for Further Research

There is a paucity of empirical research on evidence-based management implementation which is one of the few areas where proponents (Kepes et al., 2014; Minjina, 2015), critics (Morrell et al., 2015), and researchers (Glaub et al., 2014; Spiri & MacPhee, 2013; Wright et al., 2016) agree. A majority of empirical studies focus primarily on the effectiveness of a particular evidence-based practice making it difficult for researchers to locate and find literature directly related to evidence-based management decisions. The linkage between practice and decision-making may be partially documented by the literature, but the linkage is rarely studied independently causing researchers to sift through haystacks of evidence-based studies in the hopes of finding the needles that describe evidence-based management decision-making processes.

PSAPs as a population for evidence-based practice and management.

Funneling further down into the narrower, yet multidisciplinary, field of PSAPs and the overall 9-1-1 community, there are even less empirical studies related to evidence-based management decision making (Gardett et al., 2016). Again, most empirical studies discuss the effectiveness evidence-based practices such as telephonic cardiopulmonary

resuscitation (Sasson et al., 2013; Sutter et al., 2015), medical protocols (Clawson et al., 2016; Shah et al., 2003; Weiser et al., 2013), fire sciences (Dornseif et al., 2016), or information technology usage (Atthey & Stern, 2002). Diving even narrower and deeper, there is one study related to quality improvement programs in a PSAP environment that is nearly 20 years old (Clawson et al., 1998). Confounding efforts to locate relevant research is the fact that “quality of service” is a PSAP specific technological term that has nothing to do with quality improvement.

PSAP leaders’ perceptions of evidence-based quality improvement. Finally, there is no research into how PSAP leaders make decisions related to evidence-based practices. The closest corollary is the Sutter et al. (2015) national survey which studied the prevalence of one evidence-based practice with no details on the decision-making processes behind the use of such practice. Extant qualitative research seemingly centers on front line telecommunicators such as Tracy and Tracy’s (1998) case study of three rare instances of open rudeness, or Shuler & Sypher’s (2000) case study regarding telecommunicators as emotional laborers. Studying PSAP leaders as participants and their views on evidence-based management decisions regarding quality improvement adds to the current dearth of knowledge.

Literature Review Summary

Evidence-based management theory may offer potential solutions to PSAP quality inconsistencies and inform further research related to development of national standards of care. The current quantitative and mixed methods literature supports evidence-based management proponents’ claims that better evidence leads to better decision making and

programmatic outcomes with some studies using the positivist gold standard of randomized, longitudinal trials (Crowley et al., 2012; Glaub et al., 2014). Other qualitative literature discusses practitioner (Bartlett & Francis-Smythe, 2016), first-line supervisor (Armstrong, 2012), and limited leadership (Spiri & MacPhee, 2013; Walker et al., 2015) views on evidence-based practice or the decision-making processes surrounding adoption of evidence-based practice.

This dissertation study closes a research gap by targeting PSAP leaders' perceptions, specifically those leading designated wireless PSAPs in New York State (NYS), regarding the primary question: How do NYS wireless PSAP leaders support effective implementations of quality care? Four subordinate research questions further refine specific elements of the primary question, specifically: (a) How do PSAP leaders measure performance based on their definition of quality? (b) How do PSAP leaders perceive factors related to quality improvement? (c) When do PSAP leaders believe evidence-based management theoretical frameworks, such as national standards of care, should supersede local and personal experience frameworks; when do they not? (d) How do PSAP leaders' views align with evidence-based management theory? The study performed guided discussions with focus groups consisting of former and existing wireless NYS PSAP leaders followed by directed content analysis (Hsieh & Shannon, 2005) to answer these research questions as discussed fully in Chapter 3.

Chapter 3: Research Design Methodology

Introduction

In Chapters 1 and 2, research and experience showed the quality of 9-1-1 services can mean the difference between life and death (APCO, 2013a; DeLong v. County of Erie, 1982). APCO (2015) along with other nationally recognized 9-1-1 organizations created a minimum standard for PSAP comprehensive quality improvement programs, yet there is no mandate for PSAPs to adopt such a standard (USDOT, 2013). This study specifically focuses on quality improvement perceptions among New York State (NYS) wireless PSAP leaders from an evidence-based management theoretical framework. This study uses a qualitative method of inquiry called directed content analysis (Jiggins Colorafi & Evans, 2016; Hsieh & Shannon, 2005). The next few sections will briefly review elements from Chapters 1 and 2 relevant to the methodology before delving into a more detailed description of the study.

General Perspective

With the advent of the 2015 standard, PSAP leaders must evaluate which standards to adopt or even mandate by law. As stated in previous chapters, the evidence decision makers use to justify policy becomes critical to the success or failure of such policies. Evidence-based management is “the basing of managerial decisions on the best available evidence” (Robbins & Judge, 2017, p. 11). Some empirical studies show evidence-based management processes may improve the quality of care provided by PSAPs in the areas of medical protocols (Clawson et al., 2016), quality improvement

programs (Bhave, 2014), research knowledge (Olola et al., 2016), and community leadership knowledge of evidence-based practices (Gloppen et al., 2016). Yet critics warn that overreliance on certain forms of evidence as a panacea may not be in the public's best interest (Boyes-Watson & Pranis, 2012; Morrell et al., 2015; Russell, 2012).

There is little empirical research on evidence-based management decision-making (Wright et al., 2016), PSAP quality improvement (Clawson et al., 1998), or PSAP leaders as a population. This study provides new insight into how PSAP leaders make decisions regarding the quality of service they provide to the public. The study assists our understanding of how evidence-based management theory (Rousseau, 2006) aligns with PSAP leaders' reality.

Problem Statement

The quality of service provided by PSAPs is inconsistent due to the lack of mandatory standards of care at the national, state, and local levels (APCO, 2103b; NHTSA, 2013; USDOT, 2013). Public demands and duties placed on PSAPs have grown due to technological changes, civil cases alleging negligence, and the emergence of national recommended standards of care (APCO, 2013a; Clawson et al., 2012; DeLong v. County of Erie, 1982), yet governments at all levels have been slow to create governance structures to reinforce adherence to standards (NHTSA, 2013; USDOT, 2013). Despite 9-1-1 being established as the national emergency number in 1999 (Hevesi, 2004), states and local municipalities provide most of the funding and oversight to PSAP operations (NHTSA, 2013; USDOT, 2013). States regulated local surcharges, excise taxes, or universal service fund revenues, but most state laws “stop short of addressing the full operational scope of 9-1-1 service” such as minimum training

standards, staffing, quality improvement, or other best practices (NHTSA, 2013, p. 14).

This study offers possible solutions to governments regarding which standards of care should be adopted, what measures best define quality, and what factors including staffing and funding may be necessary for success.

Research Context

There are currently 6,359 primary PSAPs in the United States of which 191 primary PSAPs operate in the State of New York (FCC, July 31, 2017). Most of the PSAPs operating in NYS are locally operated and controlled, however NYS established laws governing local and state surcharges as early as 1989 (Hevesi, 2004). In 2002, NYS updated surcharge laws and established a statewide governance board to develop “minimum standards for public safety answering points” (Hevesi, 2004, p. 3).

The NYS minimum standards only apply to those PSAPs receiving wireless surcharge funds. Recently, NY Statewide Interoperability and Emergency Communications Board members stipulated the standards should apply to all PSAPs to ensure a minimum quality of service throughout the state (New York State Department of Homeland Security and Emergency Services [NYSDHSES], 2015; NYSDHSES, 2016). Currently, only 56 county PSAPs (excluding the City of New York) accept wireless 9-1-1 surcharges and are therefore required to meet the minimum adopted standards (NYSDHSES, in press). While the NYS adopted minimum standards address matters such as wireless 9-1-1 equipment capabilities, staffing, and training, there are no standards governing NYS PSAP quality improvement programs (21 NYCRR § 5200 n.d.).

The advent of the APCO (2015) national standard has the potential to alter which quality improvement standards are adopted, which PSAPs must follow those standards, what funding mechanisms will be in place to support PSAP quality improvement, and how NYS PSAPs operate in the future. Since New York is a large state and one of the few states to adopt minimum 9-1-1 standards (USDOT, 2013), understanding how NYS handles these questions may provide guidance to the nation as a whole. To gain insight on these potential changes, the study elicited former and current NYS wireless PSAP leaders' perceptions regarding quality improvement.

Research Questions

This study explores how NYS wireless PSAP leaders evaluated the quality of service PSAP employees provide to the public, what forms of evidence they used to justify their quality improvement programs, and whether existing national standards of care impacted their programmatic decisions. The study also identifies what PSAP leaders perceive as barriers to achieving quality and what factors they believe contribute to quality. Finally, the study analyzes and discusses the rich content provided by PSAP leaders on these topics with regard to evidence-based management and evidence-based practices.

As characterized in Chapter 1, the study addresses the primary research question: How do NYS Wireless PSAP leaders support effective implementation of quality care? Four subordinate questions provide insights into PSAP leader perceptions regarding the primary question. (a) How do PSAP leaders measure performance based on their definition of quality? (b) How do PSAP leaders perceive factors related to quality improvement? (c) When do PSAP leaders believe evidence-based management

theoretical frameworks, such as national standards of care, should supersede local and personal experience frameworks; when do they not? (d) How do PSAP leaders' views align with evidence-based management theory?

Research Design Based on Focus Groups

The study used a qualitative method of inquiry called directed content analysis (Hsieh & Shannon, 2005; Jiggins Colorafi & Evans, 2016). The study purposefully sampled former and existing NYS wireless PSAP leaders as participants (Creswell & Poth, 2018; Hickey & Kipping, 1996). Participants were invited to focus groups and semi-structured interviews were conducted for data collection (Jiggins Colorafi & Evans, 2016; Moretti et al., 2011). Following data collection, the researcher performed directed content analysis of the interview narratives. The analysis employed a priori coding schema (see Appendix B) for alignment with evidence-based management theory regarding quality improvement while allowing for new codes or themes to emerge as part of the iterative process (Hsieh & Shannon, 2005; Potter & Levine-Donnerstein, 1999).

This qualitative methodology has its roots in a deductive form of content analysis where existing theory is used to inform the interview questions followed by a data analysis process to test theory assumptions (Hsieh & Shannon, 2005; Potter & Levine-Donnerstein, 1999). While other qualitative designs such as grounded theory or inductive content analysis may also help inform the answers to the research questions (Creswell & Poth 2018; Sandelowski, 2002), the presence of an existing theory, evidence-based management, assisted in creating a priori codes to inform the process (Hsieh & Shannon, 2005; Potter & Levine-Donnerstein, 1999).

The selection of this methodological research design does have limitations. Specifically, the existence of pre-determined codes may blind researchers from identifying other emerging categories and themes (Hsieh & Shannon, 2005; Potter & Levine-Donnerstein, 1999). Additionally, researchers may seek only to reinforce their preconceived notions regarding the theory rather than look for disconcerting data (Hsieh & Shannon, 2005; Potter & Levine-Donnerstein, 1999; Saldana, 2013). These limitations are inherent within qualitative analysis (Hickey & Kipping, 1996) where the researcher is the instrument (Creswell & Poth 2018; Saldana, 2013; Sandelowski, 2002). Yet, evidence-based management theory suggests it is local leaders adapting research to their individual context that closes the research-practice gap (Rousseau, 2006), and thus the decision to use directed content analysis serves as the best fit to the proposed study.

Research Participants

The study purposefully sampled former and current PSAP leaders who were employed at the designated wireless PSAPs for each of the 56 counties (excluding the City of New York) within the State of New York. A purposive sample is a non-representative subset of a larger population specifically chosen due to their unique experiences or expertise on the study's subject matter (Creswell & Poth, 2018). For the purposes of this study, PSAP leaders were defined as individuals whose job descriptions included, but are not limited to, primary supervision of all PSAP personnel; development and implementation of PSAP policies and procedures; PSAP staffing and scheduling; PSAP training or quality improvement; and PSAP budgeting. To ensure a breadth of ideas and experience throughout NYS, only one participant from each county was invited to each of the focus group sessions. This prevented a single agency with multiple PSAP

leaders from dominating the sessions, or worse, suppressing participation in focus group discussions due to internal agency relationships (Brinkmann & Kvale, 2015; Esterberg, 2002). Since multiple members from one county may potentially be identified as PSAP leaders, a review of publicly available job descriptions using county human resource websites determined which employee best fit the study definition of a PSAP leader. The researcher is a member of the NYS 911 Coordinators Association, a professional non-profit organization. The researcher provided a brief presentation of the study at one of the semiannual 911 Coordinators Association conferences to encourage interest in the study.

Recruitment Procedure

Following St. John Fisher Institutional Review Board approval, the researcher generated a list of potential participants from the publicly available member list on the association website. As stated above, a review of job descriptions determined which employee from each county was invited to the focus group sessions. A list of alternate names was also created in case participation attrition exceeds initial expectations or if a PSAP leader elects to send an alternate due to PSAP operational considerations (Brinkmann & Kvale, 2015; Moretti et al., 2011; Saldana, 2013).

The researcher used existing PSAP leader contacts through the association to set up geographically convenient host sites to conduct the focus group sessions. The researcher contacted potential applicants via e-mail and phone to determine their initial interest in the study. Once participants expressed initial interest in the study, the researcher coordinated the best location, dates, and times to conduct the focus group sessions. Participants were sent electronic calendar invitations to attend sessions based

on their geography and previously indicated availability. Since the researcher is also a PSAP leader, the researcher's county was not invited to the focus group sessions for ethical reasons.

Four sessions consisting of three participants each were conducted for a total of 12 participants. The overall intent of the study was to interview between 10 to 12 total participants or until data saturation is reached (Brinkmann & Kvale, 2015; Esterberg, 2002). At least four to six participants were invited to each focus group with the anticipation of having three to five attend each session and allowing for attrition (Brinkmann & Kvale, 2015; Moretti et al., 2011; Saldana, 2013). Hosting four focus group sessions on different dates at regionally based locations provided participants multiple opportunities to attend interviews based on their individual schedules and proximity to host sites (Brinkmann & Kvale, 2015; Saldana, 2013).

Upon arrival, each participant was provided an informed consent form approved by the St. John Fisher Institutional Review Board (Brinkmann & Kvale, 2015; Creswell & Poth, 2018). After participants consented, they were permitted to attend the focus group session. The next three sections: Instrumentation, Data Collection, and Data Analysis Focus will discuss the remainder of the procedure.

Instrumentation Procedure

The researcher conducted focus group interviews using a semi-structured interview format. The researcher asked open-ended questions developed to answer the research questions and ensure the purpose of the focus group is fulfilled (Charmaz, 2002). Pilot testing of the questions was conducted with the first of four focus groups (Brinkmann & Kvale, 2015). Questions were divided into three major categories: main

questions directly related to the research questions; probing questions designed to elicit more detail; and cross-talk questions designed to encourage alternate opinions or greater participation (Charmaz, 2002).

Main questions. There were six main questions designed to specifically answer the study research questions. The main questions begin with the phrase “Please give me an example or describe a time . . . ”

1A. That you knew you did a good job.

- How did you know?
- How should performance be measured?

1B. That things did not go correctly, in terms of performance.

- What went wrong?
- What came as a result?

Interview questions 1A and 1B were designed to answer research sub-question 1 by eliciting operationalized definitions of quality and how PSAP leaders measure quality.

2A. That you tried to implement a change in standards or procedure and were successful.

- What made you try to implement the change?
- What made you determine which standards / procedure to follow?

2B. That you tried to implement a change in standards or procedure and failed.

- What do you think contributed to the failure?

The PSAP leader answers to interview questions 2A and 2B directly related to participant perceptions regarding quality improvement factors from research sub-question 2.

3A. When you know that following certain standards or procedures ensured better quality care.

- What were the standards and how did you know it was “better”?

3B. When you think following certain standards or procedures do not help, and may cause problems.

- What are the standards or procedures?
- Why do you think following them may have been problematic?

Interview questions 3A and 3B were designed for participant reflection on standards development and validity in relation to sub-question 3.

PSAP leader discussions and examples provided in reply to the six main questions informed research question 4 regarding alignment to current evidence-based management theory. The use of the a priori codebook allowed the researcher to evaluate if topics previously identified in the literature were appearing in participant discussions. While the answers to the six main questions provided generally sufficient information related to research sub-question 4, the following interview questions were used to elicit more direct responses:

4A. How do you know standards are good and effective?

- What should be the minimum standards of care?
- What is the best way to improve?

4B. What is your view of evidence-based standards or procedures?

- What are the pros and cons?
- Can you ever over-rely on evidence-based management?

Probing and cross talk. During the focus group discussions, additional information or topics were introduced but not fully explored by the participants. Probes such as silence, clarifying, validating, or seeking meaning prompted deeper discussion that was both relevant to the conversation and necessary to answer the research question (Charmaz, 2002; Saldana, 2013). As stated above, cross talk within focus groups is critical to uncovering minority opinions or encouraging full participation, therefore the researcher encouraged cross talk or specifically called upon less active participants to ensure multiple viewpoints were discussed (Brinkmann & Kvale, 2015).

Bracketing. The researcher's professional position provides both access and an immediate familiarity with the social, political, and professional contexts of the study. However, the researcher was very cognizant to approach focus group interviews and follow-on analysis with a deliberate naiveté (Brinkmann & Kvale, 2015). Deliberate naiveté allows the researcher to exhibit “openness to new and unexpected phenomena . . . and a bracketing of presuppositions” (Brinkmann & Kvale, 2015, pp. 33-34).

Data Collection Procedure

Each focus group session last approximately 1 hour and 30 minutes each and commenced with an opening statement (see Appendix C). Participants were placed in an open circle or around a table (depending on host facilities) to facilitate cross discussion among participants. The researcher allowed willing participants to maintain the session for a longer period than the originally intended hour session. Interviews were audio and video recorded ensuring verbal and non-verbal communications were captured (Sandelowski, 2002). Field notes describing location characteristics, interpersonal exchanges, and “gut” feelings were also recorded (Sandelowski, 2002). Participants

completed a short organizational form (Appendix D) at the end of each session. The form was not used for this study but will serve as a pilot test for follow-on quantitative prevalence surveys. As a thank you, participants were provided a meal or gift cards (Brinkmann & Kvale, 2015).

Data Analysis Procedure

Interviews were transcribed and entered via rich text format into a coding software database for analysis. Video recordings were utilized during the transcription process to properly identify speakers and serve as a backup to audio recordings. All data and backups were stored on password protected drives and maintained solely by the researcher after transcription. Video recordings were not specifically coded but were used as a reference by the researcher to determine the level of agreement with a speaker or for triangulation of data (Moretti et al., 2011).

The researcher was the lens through which the collected data is interpreted (Creswell & Poth 2018; Hickey & Kipping, 1996; Saldana, 2013; Sandelowski, 2010). Bracketing was essential during both the data collection and analysis processes since an a priori codebook will exist, thus introducing a preexisting mindset to interpreting the data (Hsieh & Shannon, 2005; Saldana, 2013). Member checking transcripts and triangulating using information from multiple participants helped the researcher determine the true intent behind texts (Saldana, 2013). Analytic memos, detailing the researcher's decision processes behind coding served as reflective guideposts during the iterative cycles of coding (Esterberg, 2002; Hickey & Kipping, 1996; Jiggins Colorafi & Evans, 2016; Saldana, 2013; Sandelowski, 2010). Analytic memos also helped the researcher

determine whether coding will “attend to the surface of words, or, read into, between, and over the lines” (Sandelowski, 2002, p. 107).

As previously noted, the directed content analysis approach utilized a priori codes as identified by preexisting research and literature from an evidence-based management theoretical framework (Hsieh & Shannon, 2005; Jiggins Colorafi & Evans, 2016; Potter & Levine-Donnerstein, 1999). Specifically, the multi-step process as identified in Jiggins Colorafi and Evans (2016) was used with adaptations for electronic versus manual coding. The iterative process allowed for both alignment with preexisting categories and the emergence of additional categories. As codes coalesced into categories, analysis developed more abstract forms of broader categories resulting in overall themes aimed at answering the research questions (Hsieh & Shannon, 2005; Jiggins Colorafi & Evans, 2016). A summarized list of the steps from Jiggins Colorafi and Evans (2016) is below:

1. Create an a priori coding manual derived from the theoretical framework and literature before data collection, organized by domains or thematic groupings.
2. Transcribe the interview texts and document pre-analytic remarks in memos.
3. Perform first level coding by dividing sentences or paragraphs into meaning units. First level codes are gerund verbs with an “ing” ending to “denote action” (p. 21).
4. Similar codes organized into more abstract categories.
5. Pattern codes revised and redefined, exemplars used for clarification.
6. Revisit analytical memos to aid data reduction into more concise conceptual clusters.

7. Data displays or visual representations are created to assist organization, categorization, and triangulation of data.
8. Data is re-presented after analysis to fit the findings.

Validity

For qualitative methods of inquiry, validity is not a statistical term but rather a measure of “trustworthiness and authenticity” (Jiggins Colorafi & Evans, 2016, p.23). The validity of the data and subsequent analysis heavily depends on the primary instrument, the researcher (Hickey & Kipping, 1996; Saldana, 2013). Although instrumentation threats and mitigations have been discussed previously, it also important to note the participants may also introduce threats to the study’s validity by not being truthful, seeking to please the researcher, or suppressing the opinions of others (Brinkmann & Kvale, 2013). Member checking transcripts after the focus group sessions served as one mitigation to these threats (Brinkmann & Kvale, 2013). Triangulation of data across multiple sessions served as another mitigation for participant threats to validity, provided the researcher ensured disparate or non-conforming perceptions emerge during analysis (Saldana, 2013).

Research Methods Summary

Developing standards of care within PSAPs may improve quality for all users. Directed content analysis used a priori theory-based codes to evaluate NYS PSAP leader perceptions of evidence-based standards. Local PSAP leaders at NYS county wireless centers were a purposive, non-representative, sample of subject matter experts. PSAP leader focus groups with open-ended semi-structured interview questions served as the primary data collection method. Following directed content analysis, the resulting NYS

PSAP leaders' perceptions identified quality improvement obstacles and accelerators for consideration as the NYS PSAP community makes critical decisions regarding future funding and policy.

Chapter 4: Results

Research Questions

This study addressed the following research question: How do NYS wireless PSAP leaders support effective implementation of quality care? Four sub-questions were used to elicit PSAP leader perceptions regarding the primary question. (a) How do PSAP leaders measure performance based on their definition of quality? (b) How do PSAP leaders perceive factors related to quality improvement? (c) When do PSAP leaders believe evidence-based management theoretical frameworks, such as national standards of care, should supersede local and personal experience frameworks; when do they not? (d) How do PSAP leaders' views align with evidence-based management theory?

Methodological Overview

There are currently 56 county-designated wireless PSAPs in the State of New York. Twelve PSAP leaders (three former and nine current) participated in four focus group sessions of three persons each to discuss how they supported effective implementation of quality. PSAP leaders answered open ended questions regarding the four subordinate questions previously described in Chapter 3. Participants engaged in discussions averaging 90 minutes in length. Participants provided pseudonyms to protect their confidentiality.

Interviews were coded using a priori codes based on existing evidence-based management literature regarding standards implementation. Unless otherwise noted,

italicized text represented the original emphasis of the participant. In the following sections, there is a brief introduction of the responses to the four sub-questions. Results are then presented in greater detail in segments organized by theme.

PSAP Leaders Defining and Measuring Quality

When questioned about how they defined or measured quality in response to sub-question 1: “How do PSAP leaders measure performance based on their definition of quality?”, PSAP leaders often referenced standards or protocols. PSAP leaders wanted to understand or evaluate the purpose of a standard before implementation. One quote from Cliff, a former PSAP leader, set the tone of the entire study: “I don't necessarily know that procedures or standards that exist outside your agency are bad or good, right? It's *how* and *why* you chose to implement them” (1:142). Said slightly differently by the same participant, “The best way to improve is to always be: ‘What are we trying to accomplish?’ ‘What tools do we have in our toolbox today to do this job better than we did it yesterday?’” (1:153). As we discussed each of the sub-questions, PSAP leaders described how they tried to improve the standards of care they provide.

PSAP leaders were consistently concerned with both the accuracy and speed at which telecommunicators (sometimes referred to as dispatchers or call takers by participants) gathered and retransmitted information to responders. While there was general agreement about quality expectations, the application or measurement of those quality expectations was inconsistent across sessions. Participants regularly referenced feedback from senior leaders, responders, coworkers, and callers when discussing quality measures. PSAP leaders stated reviews of calls, radio transmissions, and data entry logs were important, however inconsistencies were impacted by staffing as discussed in

greater detail in sub-question 2. In the next sections, the themes which emerged in response to sub-question 1 are described in greater detail.

“Fast, accurate.” PSAP leaders described that they measure quality using two criteria, speed and accuracy, which are sometimes in conflict with each other. Cliff stated, “What's the minimum standard of care? In the 911 world, the specific [policy] is up to the agency, but it really boils down to two things: fast, accurate” (1:15). Ensuring help arrives to the correct location without delay during emergencies was important to participants, especially during high call volumes. This can cause some tension for PSAP telecommunicators because often PSAP have multiple emergencies occurring at the same time. In a different session, Siobhan, a current female PSAP leader from a large agency, relayed her response to a complaining citizen who felt the telecommunicator took too long to handle the citizen’s request, “She got her help as quickly as she could, so she could go on to the next [9-1-1] call.” (2:109). Another participant from a large PSAP, Byron, described how he felt PSAPs performance should be measured:

How should a PSAP's performance be measured? By efficiency, professionalism, the ability to get the job entered quickly, dispatched quickly. Mitigate problems that we can for the road [law enforcement patrol cars], so that as things are developing, we're already on top of fill-ins [fire department requests for additional apparatus], and staging [location for equipment waiting to respond]. (3:6)

Participants regularly referenced “times” when defining quality whether it was “time to dispatch” (time it takes from the initial 9-1-1 call to the dispatching of emergency responders), “arrival time” (time from dispatch to responders arriving on-scene of an incident), or even a “20-minute timer” for fire responses. Danisha who currently leads

her small PSAP stated, “I knew they did a good job based on the timeline” (4:1).

Danisha then described the complexities of 9-1-1 calls, discussed in another segment.

Equally, PSAP leaders wanted to avoid delays in the process caused by telecommunicator errors. Participants focused on the accuracy of the information telecommunicators were collecting such as the location of the incident and people involved or how they made decisions based on that information. Lillian, another former PSAP leader, told a story about a telecommunicator that forwarded a 9-1-1 call to the incorrect agency, she recalled admonishing the telecommunicator:

Well, if you get them to the wrong dispatcher, you're not making it [the emergency response to an incident] happen any faster, you're actually in fact delaying the response rather than taking those few seconds to do it right. I used to tell them *it's not always good to do it quick, it's better to do it right.* (1:56)

During an active shooter incident, another telecommunicator sent officers to the incorrect location for a business that had two stores on the same road, miles apart. Siobhan recounted how it impacted the call, “And she knew that she had messed up. And all the officers were screaming, ‘It's not at this plaza!’ And then she was like, ‘Oh.’ And there could've been like an 8-minute delay” (2:15). Siobhan later related how police officers were passing by the active shooter scene on the way to the incorrect location putting both responders and the public at risk. Larry, who recently retired from a medium sized PSAP frankly stated, “Finding people is a critical part of the job” (1:30), establishing how gathering accurate information was a standard measure of quality.

“It’s arbitrary.” When asked how PSAP leaders measured quality, the responses were mixed with quality being based on general feedback in some agencies to formalized

quality reviews with programmatic timelines. George, a longtime employee yet a relatively new PSAP leader from a medium sized agency said, “To know whether they're [agency policies] good and effective? It's your delivery to your customer, to your customer base, I think. However, based on what your standards are, . . . it's all arbitrary” (2:85). George went on to advocate that mandatory standards apply to all PSAPs within NYS, as opposed to only county-designated wireless PSAPs, to combat the seemingly arbitrary levels of quality provided by various PSAPs. This will be discussed later in this chapter under NYS governance.

Other participants relayed how performance was difficult to measure; Danisha specifically cited the complexity of telecommunicator’s jobs,

So, in regards to how should PSAP performance be measured? There's a lot of different variables because there's a lot of times where there is a big incident and they do an excellent job, but there might be 99 tasks that need to be done and one of them was done incorrectly. For some reasons that's always the one highlighted. So, I mean I measure it based on the big picture. I certainly don't pick out one or two things that were done incorrectly if the other 88 [sic] were done right. It's a good job. (4:2)

Another participant, Cliff, described how PSAP telecommunicators seem to shine during stressful events, but fail to perform during routine calls “because they've done it 1,000 times. They're just rattling off the top of their head, not really following the protocol” (1:18). This apparent lack of consistency, the inability to always measure quality, and the skewed focus on Danisha’s “1 of 99” things done incorrectly frustrated participants.

PSAP leaders believed the feedback was good, but the same feedback often discounted the good jobs their employees do more often than not.

“Feedback.” Feedback was consistently cited by multiple participants across all sessions as a primary means of determining the standard of care provided. Clark, a leader of a medium sized PSAP, bluntly joked, “Well, tongue in cheek, I’ll answer that. How do we know our standards are good and effective? No one calls and bitches on Monday morning about something that happened” (3:92). Larry, a former PSAP leader, said,

I call it customer feedback. I mean we all have customers from the EMS side, the fire side, and our police that “Oh my God, Wendy's working today? Oh God, she drives me insane, right?” And we have the same customers go, “Man, when Mike, or Joe's working, they always get it right, and they're professional.” (1:47)

Byron stated, “We are fortunate in that we do get feedback from our user agencies; we, from time to time, will get feedback from citizens” (3:3).

In the same session, Monte, a female leader from a mid-sized PSAP, raised a concern about feedback, “I just do not think performance should be measured by negative feedback. I mean, often with the public, you don't get to hear a lot, unless you're sending out surveys, or doing things like that” (3:8). Chris, a current leader of a large PSAP, described how repeated errors, especially when they are the same errors, get the attention of PSAP leaders, “Their name has passed across the desk [before] because you were getting, ‘Yeah here's a potential liability because a call didn't go in. . . . Well this is the third time I've seen this’” (4:34).

Feedback, whether it was positive or negative, was described as spurious, or in the moment, by most participants. Clark explained,

We're reliant on our supervisors to advise us about, "Hey, just so you know, on the overnight shift we had this really good call. The dispatcher did this," or, "The team did this." Or, we get an email, which is probably the lesser of the two examples, from a fire chief, or a police officer, [or an] EMS provider saying, "Hey, just so you guys know, or just so you know, your guys did a really good job last night, day before yesterday." (3:1)

Some participants did have formal survey programs, but that was not common across all sessions or participants. Going back to George, when discussing how his employees received recognition based on feedback, "arbitrary" comes up again:

It's [measuring quality] an arbitrary thing. It's not, I don't think it's set in stone, at least in my center. Typically, it's . . . doing their job, you know. Delivering a baby, technically, is doing their job. But that's a *good* thing. Doing the EMD correctly and deliver, you know, childbirth, or a save [of a person's life] or something like that. (2:6)

Reviews. The combination of inconsistent (or arbitrary) feedback and expectations that quality work is just "doing their job" often accompanied PSAP leaders' advocacy for formalized reviews, although many participants admitted they were not doing enough reviews. Chris described how reviews are so important to both quality assurance and the agency's training program:

That's a measurement. Evaluation, employee evaluations. How are they doing individually? The quality assurance reviews. How is each person doing, but that also measures us as a PSAP and how are we doing overall in our training process? [Trainees perform] reviews on our CTOs [Communications Training Officers]

when [they] get done training and we review them. How have they done? And we take those reviews. We review every class after we get done. “What are the good? What's the bad? What do we need to make changes on?” (4:8)

While training is discussed later under sub-question 2 as an implementation factor, this particular quotation reinforced the theme that formalized reviews were used as quality measurements.

Having a formalized plan for reviews came up multiple times. Cliff stated, “Well you really do need, *and this is difficult in most people's instances* [emphasis added], you really do need a formalized plan of reviewing a certain number of calls” (1:43). Siobhan discussed how her agency had a plan, but the agency’s goals were not always met:

We do a lot of QA/QI [quality assurance / quality improvement reviews] at my place. Last year, we implemented, we were going to do 20 QA/QI per staff member a month. And it's been working out fairly well. With all the training we've been doing, we've had a hard time keeping that number. But we have done at least 10 a month per person. But it's subjective. (2:91A)

Conversely, Cliff’s agency was able to reduce the on-air time (time spent talking on the radio) for fire dispatches using reviews and reinforcement:

And eventually, with constant reinforcement, and constant review, and a little bit of allowance for some flexibility . . . that [time spent transmitting information] got down so that they [transmitted]: the fire department, type of call, address, very short complaint [description of the emergency]. Done. (1:99)

Similarly, Byron expressed that formalized reviews help PSAP leaders catch performance issues before they become problems,

In our department, all employees get five call reviews a month, on top of their QI reviews from the medical priorities [emergency medical dispatch review] folks. So, you can see when somebody is not up to par and doing as they should be doing. You can hear that. (3:12B -3:13B)

While acknowledging reviews were important, PSAP leaders also raised concerns about inconsistencies across members of the quality improvement team during the grading process. Siobhan stated,

Two of my people can listen to the exact same call, and we're going to have a different outcome. Somebody's going to give them an A and somebody's going to give them a D, just because they hear a little something different in the tone of the voice. (2:91B)

Tyler, a current leader of a small PSAP, echoed those same concerns in a different session, “It was a struggle because initially we didn't have all our graders being consistent across the board. So, one guy would do it one way, one guy was doing it another way. . . . That’s not objective” (4:105B – 4:106A). Despite these concerns, participants felt reviews, even with inconsistencies, were worthwhile, especially when trying to “catch” her employees doing their job well. Returning to Siobhan:

So that's something that we're working on, but we do a lot of QA/QI at my place. I think it's important. I think it's important not just to find the bad calls, but I want to find those good calls, too. Or, I want to find those rare calls where maybe we can learn something from it. So that's been pretty important to us. (2:91C)

Although participants judged reviews were critical to providing quality, they also confessed that quality improvement reviews were not always their top priority. George

expressed a common PSAP leader reality, “Unfortunately, QA/QI takes a back burner to other projects” (2:90). When confronted with other priorities, PSAP leaders acknowledged how reviewing calls requires a great deal of time and may lead to conflict with employees depending on how the feedback is presented. These sentiments are discussed in greater detail below which leads us directly into the next section covering implementation factors.

PSAP Leaders’ Implementation Factors

Sub-question 2 asked: “How do PSAP leaders perceive factors related to quality improvement?” Implementation factors centered primarily around achieving “buy-in” from multiple stakeholders including senior leaders (internal and external), middle managers, supervisors, and employees. Other factors included training, staffing, and having time to perform QA/QI reviews of telephone calls, radio transmissions, and Computer Aided Dispatch (CAD) data entries. Finally, participants identified accreditation as a positive reinforcement to standards adoption across all sessions despite some of the participants’ agencies not being accredited. Below we will discuss each of these themes in greater detail.

“Buy-in.” PSAP leaders are not always the chief executive of their organizations but are often the primary person responsible for maintaining standards, implementing new programs, and held responsible for the performance of PSAP telecommunicators. PSAP leaders serve as brokers for multiple stakeholders from their internal senior leadership, senior leaders of responder agencies, their employees, and the public. When trying to implement standards of care, PSAP leaders described the requirement to get “buy-in” from those multiple stakeholder groups. “Buy-in” was described by PSAP

leaders as a neutral indicator, if the PSAP leader was able to achieve buy-in from their stakeholders, the implementation succeeded. However, when PSAP leaders failed to achieve buy-in, implementations either failed dramatically or slowly faded away.

Tyler described how a good standard failed to get implemented when the PSAP leader does not get buy-in, “It was a great idea and I would have probably got full buy-in except I approached it wrong” (4:61). Chris experienced the same phenomenon “There was just some issues on the fire side we needed [to fix] and it really, it just failed. And I think part of that was buy-in because we didn't get enough buy-in from the people that were doing it” (4:59). Monte gives a vivid description of how a bad idea without buy-in can create havoc in a PSAP:

There was no buy-in from the supervisors, the employees, from *anybody*, except this [9-1-1 operations] board that supported this one person. . . . Well, just making that little change made them [PSAP telecommunicators] feel like bumbling baboons, and really made the field providers say, ‘What in the world is going on up there?’ And there was no ability to explain. I mean, an email was sent out and things like that, but it really was a failure. We went back [to the previous procedure] pretty quickly, actually, because it was just crazy. (3:77)

Over the next few sub-sections we will discuss examples of both negative and positive buy-in involving different stakeholder groups such as senior leaders, middle managers and supervisors, employees, and finally from the PSAP leaders’ perspective of being a trusted insider.

Buy-in involving senior leaders. As stated earlier, PSAP leaders are not always the chief executive of their agency. PSAP leaders identified both internal and external

senior leaders that needed to be convinced if they wanted to successfully implement standards of care. When describing how his agency first implemented emergency medical dispatch (EMD) protocols almost two decades earlier, Larry flatly stated “The hard sell was the administrators” (1:76). EMD is an evidence-based process where telecommunicators ask protocol-defined questions and provide medical interventions to improve patient outcomes. The concept behind EMD was the idea that telecommunicators were the “first” of the first responders by being “on scene” (although remotely through the phone) before ambulances arrived. We will discuss PSAP leaders’ perceptions of EMD later during sub-question 3; however Larry’s depiction of senior leaders’ perceptions demonstrated how he had to work through his supervisor’s ignorance regarding the benefit of having telecommunicators give life-saving medical instructions over the phone:

All that took a toll, and the administrators . . . said, "Why aren't we just sending an ambulance?" . . . That was the mentality. . . . Our PSAP is controlled by a sheriff's office. They're cops, they think like cops, they were trained as cops, they came up through the ranks, and it's no bad reflection on them, it's just their training and background was all law enforcement. They don't see the medical side of it. (1:86B)

In the end, Larry did succeed in implementing the EMD program, along with its higher standard of care, primarily because his senior leadership trusted his judgement as addressed further on when we discuss PSAP leaders as trusted insiders.

Participants described senior leaders as both supportive and destructive when implementing evidence-based standards of care. As an example of being supportive, George admired how his senior leadership created an environment that fosters quality:

Oh, it's huge as far as I'm concerned. I mean, I'm in a fortunate position . . . since I've been in my current position, I have [had] a very progressive boss, that's extremely supportive of the division. But I could see where if you had a department head who was not in support of communications [PSAP telecommunicators], that it could be very difficult. (2:83)

Siobhan echoed George's sentiment, "My boss has been very good at pushing us forward, pushing everyone forward, and getting our good name out there. So, I'm pretty lucky, and he's really supportive of me" (2:84A). Likewise, Clark described the process he used to convince members of his county legislative body to invest in additional staff to meet standards of care,

Our [county] board of supervisors and our administration has been very supportive. . . . But, what we had to do was literally bring them in. Bring in a [county board] supervisor who may question what the need is and explain how operations work. And show them that there literally is a *need* to have a supervisor available when somebody snaps their fingers, activates their red light on their consoles, which is basically [saying], "I need a supervisor. I need help." (3:60)

Tyler told how senior leaders led the change process from the top, laterally, and down the hierarchical chain,

We worked a lot with Bureau of Fire and said okay, get them to buy into this and they did presentations to our dispatchers. Then they went out and did all of the

fire departments and then they, came back to us and said, okay this is some of the feedback from the fire departments, what's your feedback? And now our dispatchers actually love it. There's no guesswork. (4:77)

Conversely, participants also described the destructive influence senior leaders can have when they issue commands or initiate programs without engaging others. Casper, a longtime PSAP leader of a small agency, describes how senior leaders can overreact to bad incident, such as a fatal accident, by instituting a policy without consulting a PSAP leader, “It wasn't like I had any input in it [the new policy]. It was just, ‘Here it is!’ . . . What are we supposed to tell them [telecommunicators]? *It just was a poorly thought out edict*” (2:48). Tyler illustrated how senior leaders can put PSAP leaders in a difficult spot, “You have no control. . . you can't fully undermine that either and go, ‘Well I don't agree with this!’ It doesn't matter whether we agree or not. The guy who's writing your paycheck is . . . implementing it [the policy]” (4:83). Returning to Monte’s example of not having buy-in, she depicted out how a senior leader initiated the failed program described earlier “We were directed at a [9-1-1 advisory board] meeting . . . to make that change *right then*” (3:76).

PSAP leaders described how both senior leaders and supervisors, according to Lillian, are “the two biggest obstacles” to policy implementation (1:121). Cliff followed up Lillian’s comment by describing how he as a PSAP leader got in his own way, “It's related to senior leadership not having buy in. Sometimes *you* are the person who isn't giving the buy in, right? *Yourself, in person, in your own head*” (1:122). Based on the evidence above, failure to achieve buy-in from senior leaders or PSAP leaders themselves often led to disastrous or ineffective implantations whereas successful implementations

stemmed from convincing senior leaders that change is necessary. As noted above, a PSAP leader may be a considered middle management depending on their placement on the PSAP's organizational chart. Next, we will discuss middle managers and supervisors.

Buy-in from middle managers and supervisors. PSAP leaders referenced the importance of having middle managers and first-line supervisors buy-in to the logic behind any evidence-based change. Like Cliff, Casper detailed how his people had to convince him that an evidence-based standard, such as informing fire responders that 20 minutes had elapsed since the start of a fire, was necessary to implement,

I wasn't really too fond of it. It was keeping track of 20 minute from [the start of] fires. And I didn't like it when it was first approached to me, because I felt that *it was one more thing being dumped onto us*. . . . Other dispatchers, who were more in favor of it, they finally kind of lured me to understand that it is our [PSAP telecommunicators'] responsibility. (2:37)

Returning to Cliff, he related how his PSAP supervisors participated in selecting the vendor for their agency's EMD implementation "They were engaged, a couple of the senior people [in the PSAP] were engaged in choosing the program between the competitors at the time" (1:79). George described that he gets "buy-in and feedback from other participants, minimally, [from] other supervision" (2:53). Similarly, Siobhan stated that "I get a lot of feedback from my senior [telecommunicators]" before implementing changes at her PSAP (2:56).

PSAP leaders also described how supervisors can stop evidence-based standards of care before implementation can even occur. Monte told how her supervisors refused to adopt new 9-1-1 call distribution policies and how she engaged them,

The pushback has been unbelievable from the supervisors to the point where, now, I'm having one-on-one meetings with them. Because as things get going with any subgroup, whether it be a certain platoon or group of supervisors, or things like that, they get talking amongst themselves and we have those who can make things a lot worse, or a lot more dire sounding. (3:51)

Byron, however, received buy-in from his supervisors and saw success, “We vetted that. We rolled it out to some of our key staff to take a look how they felt it was going to work. We had folks that jumped in and started utilizing the change . . . very quickly” (3:68A). Chris illustrated the dual nature of supervisors and how they can either kill or promote an idea:

They're the ones working the [PSAP] operations floor and of course management can't be out on the floor all the time . . . and you can't control them. You can think you can control them and you can't. In reality, they're the ones that are going to show and push for the better items that they're supportive of. They're gonna be like, ‘Oh yeah, this is a great idea.’ They're gonna push it, they're gonna talk it up and people are gonna see that and go, ‘Wow it must be good’. If it's something negative and your supervisors are talking it down, you can control that as best as you can, but sometimes you hear about it, sometimes you don't. People on the floor are going to be negative too. And so, I think supervisor support is very important. (4:55)

Danisha also revealed how getting buy-in from her supervisors was critical to success, Well something happened with one policy that it just went awry and again I can't think of the example. But what it led to was, any policies or procedures now go to

the supervisors. They review them . . . because they're the ones doing the jobs, so I could easily miss something. So, they come from admin, they go to supervisors, they review them very thoroughly before they go to the [PSAP operations] floor from now on. (4:63)

Clark described that he seeks input from both supervisors and informal leaders within his PSAP:

You may have an idea, you may fashion something that you think is going to work, and is going to streamline your process, but as the director, I'm not the boots on the ground guy that's doing this every day. If I don't ask my staff, if I don't roll it out to folks and we pick it apart, I don't know where the failures are going to be. . . . We should trust our people to give us good feedback. We should pick their brains. Because, that some folks have chosen not to become supervisors, doesn't mean that they're not a key part of your operation. (3:71)

Clark's depiction of how some employees are leaders within the center, without having a supervisory title, leads us to the next group of stakeholders, the front-line employees.

Buy-in from employees. PSAP leaders were mixed on how they handled front-line staff although a majority of PSAP leaders expressed a desire to positively engage their staff. Siobhan spoke flippantly when she described opposition at her PSAP,

The younger staff will do it, but the older staff will just whine and moan and complain continuously. And it'll just bring down morale a little bit. But the younger staff will do it. Over half my staff is new. So, I don't have a lot of trouble like that. But the few that are there are the loudest. (2:46)

Byron took the opposite approach “If you don't get buy-in from the folks that are going to be doing this on a daily basis, you are not going to be successful, in my opinion” (3:70). He went on to further explain, “Well, if you don't have an information exchange with your staff . . . you are not going to get your troops behind you. It's simply not going to happen” (3:79). Monte echoed Byron’s sentiment, “You know, getting that buy-in . . . so many things go so much better” (3:78). Danisha plainly put it this way “If your staff is happy, you're happy. And that's really kind of I think the way we live by. If they're happy, they're performing better and ultimately you're happy” (4:56B).

PSAP leader as trusted insider. PSAP leaders expressed how building, maintaining, or failing to be trusted impacted their ability to implement evidence-based change. Monte described how a consultant was needed to add credibility to her data indicating additional staff was required to achieve quality, “We had to bring in a consultant because the numbers [weren't] enough to be able to justify [the additional staff] . . . after some, I won't say complaints, but concerns [were] raised by the public safety agencies” (3:65). George, on the other hand, enjoyed the support of his leadership and was trusted to present information in a public setting:

I was fortunate enough after the wind storm, to be able to present to our county legislature the statistics from that event as I did [when] we had a large fire a year and a half ago. And [I] was able to get the forum to present to the county legislators to promote the [PSAP] division. (2:111)

Siobhan, talking again about her supervisor said,

He'll listen to all my reasons for why I want to do something, or why I don't want to do something. And let me know what he thinks. But, he's super supportive.

And I've been pushing for more training, and he's like, "Yeah, let's do it." (2:84B)

Clark depicted how he was trusted to make most decisions and how he worked with others to build consensus,

I don't want to bother them [senior leadership] with little changes and procedures, but when we do a major upgrade, or a major change, especially on the law enforcement side, since we are a law enforcement agency, I have to be able to communicate with them. But, yeah, they put a lot of trust in me, because they know it's not a unilateral decision. (3:110)

Chris described how he has built trust across stakeholder groups over the years, "I've been a trainer, I've been . . . the shift supervisor out on the floor going through everything and then in the last 7 years into my current position" (4:42B). Larry established how his professional journey prepared him for PSAP leadership and qualified him as a NYS 9-1-1 standards developer,

I had an EMS [emergency medical service] background. I had a fire service background. I have a police background, and I have a dispatcher background. I used to say that I was the only one that had all four disciplines. (1:69A)

Interestingly, Larry introduced an unforeseen theme regarding the rise of PSAP operations as a public safety discipline worthy of equal treatment and scholarly study. This theme is addressed more directly in the responses to sub-question 4.

Training. PSAP leaders cited providing training in association with reinforcing quality and setting quality expectations. Lillian recalled how telecommunicators used

their training to find an injured driver who did not know where he was after overturning his all-terrain vehicle, “So this is where the staff tends to step up . . . they used their training, and other people got involved, and worked as a team, they used his cell phone technology to map where he was” (1:26). Former PSAP leaders, such as Larry acknowledged training was not originally a formal process “You learned from the older guy in the room” (1:89), whereas current PSAP leaders, like Clark, used retention rates of new trainees as a measure of quality,

About 50% make it through the training program, 50% do not. And it would be easy for me to say, "Well, it's just the people. They can't do the job. They can't multitask. They don't have enough technology background." But that would be very narrow minded of me to think that. Yes, that's a possibility. But now I have to say to myself, and this is a goal for next year, let's revamp our training program. Let's try to make it more successful. So how do we know our standards are good? Well, if we see more people who are getting through the training program and being more successful, maybe that's a way to gauge that we're doing a good job. (3:94)

Similarly, Chris stated that his agency is updating their training to meet current Association of Public Safety Communications Officer (APCO) standards and the needs of individual trainees, specifically millennials,

All of our trainers have to be CTO certified through APCO. . . . We have changed everything and looked at all sorts of stuff on how to train somebody because it has changed so much. Because the people that we're even getting in now, the younger

[generation] will ask so many different questions. So, it's, "Alright how do we handle them?" So, we definitely have to change for each person (4:43A)

Chris, Tyler, and Danisha spent a considerable time discussing training during their session. Danisha described how she initially reacted and then paused to reflect in response to a telecommunicator "freezing" during a large fire,

My initial reaction was, "What the hell." But then you gotta really look at it, the big picture, and go "Okay, how often does she sit in that seat [fire dispatch position]? How often is she working this position? How much training has she been given? Were you aware that she wasn't comfortable? And if you were, did you do anything about it?" (4:17B)

Danisha then went on to describe her interaction with the employee and how she resolved to give the telecommunicator refresher training rather than pursuing disciplinary actions,

She knew exactly what went wrong. She didn't hide it. She didn't sugar coat it.

She knew. So, I said, "What can we do in the future to make it better? What can I do to make you more comfortable?" . . . So, bottom line, we came up with a training plan for her to move forward so that she can become more comfortable and perform better." (4:19)

Going back to Chris, he expressed how PSAPs can provide better standards of care by providing better training and better policies:

Okay what can we do better? How can we prevent this [poor performance] from happening again and make changes? We made changes in our training to where we're making sure that we're covering in service refresher [training] every year . . . [and] making sure policies are getting designed better. (4:23)

Tyler echoed how he was also making changes to his PSAP's training program,

We're trying to empower our trainers . . . but we're redoing our entire training program. We didn't throw it out and start all over again. There was nothing wrong with the actual training piece of it, *we were just training people badly*. . . . We've sectioned it off into pieces and [now] there's benchmarks. (4:39)

Returning to Danisha, she described that supporting quality required a continuous effort on behalf of PSAP leaders, even though their employees may not always appreciate the effort,

[The] best way to improve is just . . . continuous training. They [employees] like to have training. I mean they'll complain about, "Oh you have training again." But then they come back and they're like, "Oh yeah we should have been doing this." And it refreshes them. (4:88)

From a different session, Byron detailed how long it takes to train a quality employee using a mix of nationally certified and local training programs,

Our training, and we have modified our training over the years, is . . . 20 days in class, 160 hours we'll call it. And part of that is learning the APCO [certified course material], that's the first 40 hours. And then also, the EMD [24 hours of certified training]. And then the balance of it is for [local] call taking, and policies procedures, and CAD [Computer Aided Dispatch training] and telephone use. And then they're on the operations floor with a trainer. If you're a call taker, you're on the operations floor until you're certified. That could be three, four months. (3:100)

PSAP leaders often used refresher training in response to poor performance, as alluded to earlier with Danisha; sometimes retraining occurred after disciplinary action was taken. In some cases, employees failed to respond to these opportunities by improving performance. Chris explained how even seasoned employees could fall behind on performance,

I've had 25-year employees that have gone back into remedial training because we're catching issues and go, "This is not right." I have somebody out right now that's had some issues that it's not safe for them to answer a phone call, so we have to figure out what our next steps are right now because we're not sure what's going on. (4:33)

Lillian described her frustration with the same employee making the same mistakes “over and over again, and we would try to do remedial things, counseling and retraining” (1:58). Casper relayed a detailed account of how he and his supervisors went to great lengths to correct an employee’s sub-par performance,

I actually switched shifts for a month to work with this person one-on-one. . . . And the employee knew that mistakes were being made. The person was upset at their performance. And my idea was, "Okay. Let's try to do this. Maybe not re-train but re-emphasize some things." And at the end of the month-long period . . . if the person fell into the same kind of rut, it would not be sensible to try to do any more training [the employee would be fired]. The person has been a dispatcher for long enough that they should know the basics. And some things they were really dropping the ball on [were] little things; basic, basic things. (2:22)

Casper's story along with the other previously discussed experiences of PSAP leaders highlighted the concern that training PSAP telecommunicators requires significant resources in terms of both funding and time. Larry recalled that "re-certification was again a financial concern" when considering implementation of his agency's EMD program (1:86). The time and effort required to train, recertify, and sometimes retrain employees also impacted PSAP leaders' ability to perform other quality improvement tasks such as reviews, which is discussed in our next section.

"Staffing and time." Participants consistently cited lack of staffing and time as the primary barrier to performing quality improvement tasks (such as reviews) and reinforcing standards of care within their agencies. George detailed how he had to make the difficult choice between performing quality improvement reviews or training new employees,

I'm in a difficult position, at least in my county, where we do some QA/QI but, I'll admit, we don't do it enough. And we don't do it enough because they don't have the staffing to do it. . . . We've been in a unique situation with hiring. We've put on eight people in the last 12 months. I have one supervisor that can't even work a shift because he's doing nothing but training. (2:89)

Cliff, a former PSAP leader, relayed how "we were all in the [PSAP] business before any kind of formalized plans [for quality improvement reviews] were in place. *Formalized plans, and the time to do them are a luxury, and particularly in New York State because of funding [emphasis added]*" (1:44). Later in the same session, Cliff described how the costs to implement newer technology, such as Next Generation 9-1-1, will create even more pressure on PSAP leaders to prioritize scarce resources,

It [Next Generation 9-1-1 technology] will only exacerbate the problem of not being able to have the resources to be able to have the quality review. So, there's a lot of dynamics going on that make the QA piece be something that is always going to be a struggle, not because people don't want to do it, but because there just isn't the financial incentive, or the commitment to put the resources in place to do it correctly. (1:178)

Casper lamented how he had no resources to perform quality improvement reviews,

We basically have no QA/QI at all. I tried doing it when we first went to EMD, but I was having to come in umpteen [an excessive amount] hours a week. And at that time, we had an antiquated recorder system, which made it even worse. Just, if my position was different where I could do things like that, I probably could implement it, but we just don't have it. Staffing. We just don't have anybody to do that. (2:96)

Casper then illustrated the sense of despair some PSAP leaders, particularly those from smaller agencies, encountered knowing they could provide higher standards of care if only given the resources,

I've worked my department for *25 years*, and the staffing level has never changed. Two per shift [2 telecommunicators covering 9-1-1- and dispatch services for an entire NYS county]. Period. It's never changed. And I don't foresee it changing by the time I retire. *I can see your reactions, and it is dumbfounding that in 2018, we're at the same staffing level we were before I started.* . . . I don't know whether we do, per se, a good enough job that people are okay with it, or everybody higher

up just doesn't see the reasoning behind increasing the staffing. But we're very, very backwards in that sense. (2:97)

In an earlier session, Lillian recalled her exasperation when confronted with having too much to do and not enough time or resources to do things like quality improvement reviews correctly,

A lot of that comes back to like Larry said, the budget thing, who does that [perform quality improvement reviews]? Who has the time to do that? You know? Your supervisors are acting as call takers [front-line telecommunicators], your managers are doing all the things the manager's do, *who has the time?* It really should be another whole person dedicated to that in your PSAP to just do it [quality improvement reviews] right? (1:175)

As an example of how much time is required to implement new standards of care, Clark shared how his agency took 18 months to create, update, and implement new police standards of care while negotiating with differing stakeholder groups to accomplish the intended goal of improving PSAP quality,

You also should try to work with the field providers [emergency response agencies, in this example law enforcement agencies]. However, be cautious. We implemented police protocols. We were looking to do this for a long time, back to QA, and tried to standardize how we do things. And this was an 18-month process. It took that long. (3:73)

Chris revealed how staffing issues, such as needing to train new supervisors, interfered with performing reviews and how agencies required a dedicated quality improvement position to achieve a higher standard of care,

Our quality assurance program has declined . . . over the years because of trying to get supervisors [trained] and we're actually putting a full-time person in to that spot [quality improvement position] and changing around the procedures and stuff so we can do that, which will make that a more consistent program . . . a lot of our supervisors are very much in support of that. (4:54)

Across all sessions and PSAP agency sizes, PSAP leaders identified staffing and time as the primary obstacle to providing quality or achieving higher standards of care. PSAP leaders advocated for PSAP positions dedicated to performing quality improvement reviews but confessed the ability to secure funding for such positions was highly unlikely. Interestingly, PSAP leaders often advocated for increased supervision of PSAP operations at the same time as advocating for more quality reviews, a sub-theme discussed next.

PSAP first-line supervisors as distinct role. The need for dedicated PSAP supervision was not an a priori code but emerged during coding. PSAP leaders felt strongly that PSAP supervisors should not be performing the work of front-line telecommunicators such as answering phones or handling radio traffic. Instead, PSAP leaders stated that supervisors should be available to answer telecommunicator questions, troubleshoot technology issues, or provide immediate feedback to employees.

Some PSAP agencies, most of them larger in size, have their supervisors review calls as part of their duties. Byron stated his “supervisors listen to and review the call, and [then] pass them back to the employee for their comments and feedback” (3:12A). Likewise, Siobhan used her supervisors to perform quality improvement reviews due to lack of a dedicated reviewer. Supervisors reviewed calls for employees they supervised

and two supervisors “from a different shift platoon” (2:93A). Siobhan revealed how the process completely broke down when one of her supervisors could no longer keep up, “I had a guy that was a CTO, who had a little hissy fit, and he has now stepped down from being a senior [supervisor] and went to a [front-line telecommunicator position] and resigned his CTO position. (2:92).

PSAP leaders wanted a clear separation of duties for their supervisors. Lillian adamantly exclaimed, “*Dispatchers [telecommunicators] need supervisors*, not standing over top of them all the time, but they need somebody in the room to defer a quick policy question . . . and typically [they] don't have that. Again, a funding situation” (1:109).

Lillian then described how “because of staffing levels, and call volume” her supervisors were required to act as front-line telecommunicators “pretty much all of the time, rather than just be a supervisor” (1:112A). She then explained why it was so important to have supervisors unfettered by front-line telecommunicator duties using what seems like hyperbole yet represented an all too often occurrence, “If that supervisor's in the middle of a [9-1-1] call themselves, they just can't say, ‘Hold on, I know you're having difficulty breathing, let me put you on hold while I answer this [telecommunicator's] question on [a different] call’” (1:112). If supervisors are tied down by front-line telecommunicator duties, they don't have time to supervise and help their subordinates.

PSAP leaders from later sessions spent considerable time discussing the role of a PSAP supervisor and how important the supervisor role plays in promoting quality within a PSAP. Monte “worried” that her employees would not spend “one-on-one time with the supervisor for these reviews . . . to discuss, especially, anything that stuck out, or anything that has a lot of comments in the [quality improvement] system” (3:26). Earlier,

in the senior leadership section, we discussed how Clark engaged his county board to demonstrate how he needed dedicated supervisors available to help front-line employees. Like Clark, Monte also went to her county leadership to advocate for additional supervisory staff,

We went to our legislature proposing a change in staffing, which everyone here at the table understands that it's very difficult to get positions added to your department in this time, date, and age. With the goal of having the supervisors *supervise*. To not just be the glorified break-giver and things, but to *actually supervise*. To do QA, to work on other things. To listen and join [active 9-1-1 calls] and catch things before they did become an issue. (3:49)

Byron revealed “from a supervisory standpoint, we are observing our staff on a somewhat regular basis, especially with escalating incidents” (3:5) to help front-line employees with additional task such as “phone pings [locating a cellular phone location] for extenuating missing persons . . . managing a large event . . . and make their way around to answer questions and help procedurally” (3:56B). Later Byron commented,

So, I, like Clark, don't want the supervisors committed to a 911 phone, or a dispatch channel, unless we get into a situation where we're all hands-on deck. And from time to time they may pick up that one or two calls that are in queue. But typically, we try and discourage that. (3:56D)

PSAP leaders also discussed how supervisors who refuse to monitor employees or employees ignoring their supervisors created quality issues. Chris admitted that an administrative policy that was meant to help clarify the chain of command when two or more supervisors was working backfired because “we kind of took power away from

other supervisors and gave it to one when they all should have the same power” (4:58B). Chris then had to go back to his supervisors and remind them, “no matter where you're working, *you're a supervisor*. You should be monitoring things going on” (4:58D). Larry commented how he often had to react to complaints from the public regarding poor telecommunicator performance,

It's reported that a dispatcher was curt to a caller. You vox [review] the call, and you find out yeah, that's the case. And some progressive discipline may be in order, which leads to the whole supervisory function in 911. We don't have enough. (1:108)

Unlike Larry’s relatively mild example of poor performance, Monte detailed how a telecommunicator, for no valid reason, delayed an emergency response for an elderly female that needed an ambulance,

An employee who [handled a] 911 call [and] was given the street, the cross streets, and approximate house number, what color the house was, how many houses on what side of the street from the nearest intersection the house was, and an owner's name of the house. And [the telecommunicator] *refused* to send an ambulance until she got better information. (3:28)

Given the life or death implications of errors in a PSAP environment, PSAP leaders believed good supervisors were the primary promoters of quality within their organizations. PSAP leaders also believed that organizational culture could either reinforce or inhibit quality as discussed below.

Organizational culture. PSAP leaders gave examples of both good and bad organizational cultures within PSAPs. Generally, participants enjoyed their workplace,

the freedom given to them by their supervisors, and gave concrete examples of how their employees rose to meet challenges. Larry started his session by praising his former PSAP's culture. He told a story about how telecommunicators responded to a 9-1-1 system failure after a lightning strike on a holiday weekend "when people would rather be out picnicking and being with their families" (1:15A),

They [telecommunicators] sit home sometimes and listen to the monitor [radio system]. And they knew we were in trouble, so my cell phone rang, "Hey do you need any help?" And we called in additional staffing. . . . Then people that were on shift when that happened offered to stay. I mean the normal person would say, "Hey, my shift is over, I'm out of here. I can't take this anymore." That didn't happen . . . it's like when dispatchers work at a 9-1-1 center, and their geographic area is underwater, and they don't know if they have a house to go home to, but they're willing to stay. *And that's the kind of people that work for us. That's the credit I would give to them.* (1:14B and 1:15B)

Lillian also described how her team used "their training . . . technology . . . and that little bit of thinking outside the box" to make a "big difference" and achieve a "happy ending" when locating a man in a remote area trapped with a mangled limb (1:27 – 1:29).

Siobhan related how her supervisor gave her the support needed to improve training and she sincerely stated, "I'm probably the luckiest girl in the world" (2:84C).

In the later sessions, PSAP leaders described the "team" atmosphere in PSAP and how the team can overcome challenges. Chris spoke about how his telecommunicators responded to a difficult CAD transition in the middle of summer because their old system "was about to fail":

They worked together . . . throughout the year, they stayed positive. Got through it as a team and then continued to work as a team to make changes . . . you can get through those things and that shows how well a PSAP can actually work together (4:3B)

Byron relayed how he tried to instill a culture that everyone in the PSAP succeeds together or fails together,

If you can convince your staff that *successes are celebrated by all, and so are failures*. Because when something bad happens, nobody says, "Clark, you screwed that up." [Instead] it's like, "I can't believe 9-1-1 made that mistake." The term is collective. And people refer to the 9-11- center, or the dispatch center, and everybody that sits under that roof feels that pain when something bad happens. (3:113)

PSAP leaders also gave examples of how complacency can set in, administration can allow problems to fester, or how civil service and union due process can impact their ability to reinforce standards of care. Tyler, when discussing employee resistance to quality assurance feedback, shared "It's a whole lot easier with some people than others. Some are not into self-reflection. Some just could care less" (4:32). Casper described how inaction by administrators can create a negative culture,

The previous administration tended not to want to make waves with employees. . . . People knew, "Okay, what are they going to do to me? Probably nothing." So, because there was never really any hardline discipline, I think that aggravated the situation in general. So, people either felt resigned that nothing was going to happen, or they didn't even bother to make some complaints. (2:21)

Mirroring Tyler, yet in a different session, Clark's vehemently argued that quality improvement "isn't about discipline . . . so it's unfortunate that we have people who always go on the defensive . . . there's no quality improvement or quality assurance in their mind" (3:35). He further expressed how PSAP leaders and their employees sometimes have diametrically opposing ideas about quality improvement standards of care,

QA is punitive in their opinion, when they get an EMD review, when they get a fire review, and it's bad by definition, they go, "Oh, here we go. Somebody's picking on me." That's not at all what QA is supposed to be about. It's supposed to identify some weaknesses, give them the tools to change, and improve. (3:36)

Clark then went on to describe how relying solely on feedback can lead to complacency, "If we're not getting a lot of complaints, I think we're doing an okay job. However, that can make you complacent. You continually have to look at how to improve" (3:93).

When describing negative cultures such as complacency, resistance to change, or even disciplinary measures, PSAP leaders often commented on their sense of powerlessness when dealing with NYS civil service due process and unions.

NYS civil service. PSAP leaders felt that NYS civil service process not only prevented them from hiring good candidates, but also made it nearly impossible to remove poor performers. Byron described how the local civil service exam, a test that applicants must take prior to hiring, doesn't always meet the needs of his PSAP, "unfortunately, we have never hired a full complement of vacancies [because] we just haven't had the candidates" (3:99). Lillian also described how NYS civil service rules

hurt her transition into PSAP leadership because civil service does not allow two people to temporarily hold the same position,

When I first became a manager in the PSAP, the old manager was gone, and *I mean he was gone*, so I didn't have that because with civil service, you can't double fill, you can't keep that person around to kind of train you a little bit.

(1:116A)

Unions. PSAP leaders were especially exasperated by their inability to remove poor performers, especially when unions became involved. Siobhan excitedly complained how an employee with multiple disciplinary citations persisted at her PSAP:

I have an employee that is horrible. She is so rude to callers that, I can't even control her. I actually put her through APCO's customer service class. And in the last six months, she's had three records of counseling . . . and we just denied her raise. . . . And she is pissed. And she's not mad at herself for doing the job improperly. She's mad because she got caught. And it wasn't me who found it. It wasn't a supervisor who found it. These were calls from the public. Somebody actually called [an elected official's office] to complain about her 9-1-1 call. And [we] can't get rid of her. She's protected, between civil service and the union.

(2:29)

Similarly, George told his story about an employee who personally received counseling from the PSAP's chief executive often repeated "small mistakes . . . not following the correct policy" (2:19B). When George's leadership team looked deeper they found "that almost every year, and almost their entire career, this person has had minor mistakes"

(2:19D). George later lamented, “You have to put so much paper [written documentation for poor performance] on top of everything . . . it takes forever” (2:30).

While some participants acknowledged unions have a good purpose, they often get abused by poor performers. Clark discussed both the good and bad side of union representation; he defended unions stating,

New York State has civil service protection, has unions. Almost every 911 center [in NYS] has a union and that's good for people. I truly believe that it is. It should be that insurance you hope you never need. (3:34B)

In the same session, Monte commented, “one of our biggest challenges is that the supervisors and the dispatchers are both in the same union” (3:24). Monte explained how her supervisors struggled to give adequate feedback to their subordinates because they feared backlash, “it is tough for some people, even when they work in a supervisory role, to be honest with other people” (3:25). Monte then told her story about how she was investigating a complaint and her employee overreacted:

[While] just asking for “your [telecommunicator’s] side of the story”, my door was slammed twice. I was told I was making them nervous. They demanded union representation. It just went wrong. Everything went wrong with this . . . 2 years later [the union] are threatening me with the way I handled the “asking” for “their side of the story”. . . . *And now I'm being threatened*, because they got a lawyer. (3:31-3:32)

After defending the purpose of the union (described above), Clark commiserated with Monte, “Monte gave an example of somebody who used their union in an incorrect way . . . they would rather waive the union flag . . . [when] I just need to get ‘your side of the

story' to do an investigation" (3:34D). Monte's poignant example demonstrated how PSAP leaders are often caught in the middle between upholding standards of care and facing emotionally exhaustive and lengthy legal battles just for doing their job.

Accreditation. In each of the sessions, participants identified accreditation as an impetus to either meet or maintain standards of care within their agencies. In one of the earlier sessions with former PSAP leaders, they told how PSAP accreditation was born in NYS, primarily through the New York State Sheriff's Association. Larry humorously walked us through the logic at the time "One of our goals as an agency was to become accredited, so to become accredited, *let me think*, there must be standards" (1:90 – 1:91). Larry then described how he, Cliff and "a room of other people started sitting down, and making the standards for the State of New York. And I think originally we came up with 21 different standards that we had to meet" (1:92). We will discuss both standards development and peers later on, but it is interesting to learn how and why organizations create accreditation processes that other organizations subsequently adopt.

Cliff described how his agency struggled to meet accreditation, even though he was one of the standard makers and assessors, and that the process a PSAP went through to get accreditation was as important as the accreditation itself,

My own PSAP hadn't gone through the process yet, because . . . the procedures were in place, but the documentation wasn't all in place, and we were changing some things, and had to finish dotting all the 'i's' and crossing all the 't's'. (1:124)

George, in a different session mirrored a similar sentiment, "As an accredited agency, those big aspects [of quality assurance / quality improvement] are there, *forced by the*

standards. And it's not a bad force, it's a good force [for] subtle changes to try to improve quality” (2:36).

Some agencies sought accreditation not only at the state level, but also at the national and international level with organizations such as the Commission on Accreditation for Law Enforcement Agencies (CALEA) or APCO 33 (a PSAP training accreditation program). Chris stated, “Our training program, because of our accreditation with CALEA, is pretty thoroughly standardized . . . hopefully the first quarter of this year, we'll have everything sent in for APCO 33” (4:53). Byron, who also runs a CALEA accredited PSAP stated, “Because we are a CALEA accredited center, we send out monthly surveys to the citizens” (3:4). We will cover how PSAP leaders used local data during the discussion on sub-question 4.

PSAP leaders acknowledged that accreditation was valuable in promoting better standards of care, but reminded us that accreditation only works if the standards mean something. Larry recalled what he believed was the original motive behind accreditation, “Accreditation, I think initially when it started out was more about the free press” (1:127). Larry went on to state that accreditation only means something when assessors are willing to deny accreditation if the standards are not met and tell PSAPs, “We'll come back next year [indicating accreditation failure]” (1:128). Going back to Cliff, the political aspect of early NYS Sheriff's PSAP accreditation processes led him to throw out the good with the bad,

I never realized it until many years later that *I sabotaged myself* . . . because I no longer saw the value in it. Because another county went through and didn't really do it, so what value is there? Now that's not really the case. . . . *There is a lot of*

value to going through the process and making sure that you meet all those standards [emphasis added]. (1:126)

This leads us to our next section where we discuss PSAP leader perceptions of standards.

PSAP Leaders' Beliefs Regarding National Standards of Care

Sub-question 3 queried: "When do PSAP leaders believe evidence-based management theoretical frameworks, such as national standards of care, should supersede local and personal experience frameworks; when do they not?". Participants believed national standards of care, such as EMD, helped PSAPs provide quality care. Another major theme participants expressed was standards must be adapted to the local PSAP environment to accomplish the desired outcomes. Participants also described how standards develop through local experimentation, discussion with peers (a separate, though interconnected theme), regionalization, then national acceptance.

National standards of care as quality care. For many PSAP leaders, having a nationally certified protocol to follow led to a better standard of care. Chris commented on how his agency used the certification process through the National Center of Missing and Exploited Children (NCEMC) to improve quality care,

We got certified with NCMEC. . . . They want us to ask all these questions, but in reality we are definitely providing better care because if it comes that there is an abduction . . . we are going through the guidelines. (4:76)

PSAP leaders across all session cited EMD as proof that national standards of care provided better quality care. Danisha, when asked for examples of good national standards, she stated,

For us it was EMD. I mean hands down. We know that providing that service makes a big difference in calls. How do we know? Because we save lives, and we've seen it happen. We've had a couple situations where compressions and mouth-to-mouth has truly saved a life. Delivering a baby, we've had two of those since we've gone online with EMD. So, I think those end results there definitely show staff. And you know, when something like that happens, we highlight it.

(4:75)

Similarly, George stated seeing good outcomes while using national standard of care reinforced belief in the standards:

That's one of my best examples . . . [was] going to an official EMD program. And it was all part of our accreditation process. But I think following [EMD] standards . . . really sticks out. When you have a save of a cardiac arrest, a save of a choking victim, [or] childbirth, all by pre-arrival instructions, I think that's why it stands out, because those [example incidents] are the wow factor. *And that's why we're in the business.* (2:59)

Cliff relayed how EMD was viewed so positively, implementation received buy-in from all the stakeholders,

I don't know if we're a rarity, but when EMD went in at our county, the funding was given pretty quickly. The dispatchers were completely on board with it. . . . I know there's been counties where the union said, "Nope, we're not doing it until you pay us more money." That didn't happen. They embraced it completely.

(1:77 – 1:78)

At a different session, Clark admitted before EMD telecommunicators had to “hope they had some medical experience to help somebody with choking or CPR” (3:82B). He then declared, “EMD is obviously a perfect example of implementing something that has obviously had better results, and better quality care for the caller” (3:82D) .

“It’s a template.” Although PSAP leaders acknowledged the importance and effectiveness of national standards of care, they also cautioned that those same standards of care should be adapted for local implementation. Returning to Clark, “APCO and NENA [National Emergency Number Association] have great standards to go on. I think though, remember, *that's a template that they give you*, and you have to modify it based on the needs of your own agency” (3:95B). Likewise, Cliff stated, “The standard isn't going to tell you exactly how to do ‘x’. It's going to give you a guideline on how to do ‘x’ in your environment. And then your own internal stuff is going to be there” (1:96). In a later session, Danisha reflected, “As far as what the minimum standards of care are, it's hard . . . because we all operate differently” (4:87a). Finally, George explained, “You have standards and policies, but I think, in most cases, that standard of policy may not be verbatim because it needs to have that local twist” (2:100). Next, we will discuss how PSAP leaders perceive how standards should be developed and why standards development was so important to them.

Standards development. PSAP leaders felt that standards should always be under review and tested for validity. Former PSAP Leaders, like Larry, recalled “When I came in, there were no standards. Nothing was written anywhere. . . . Standards are good, because you create your standards, they're in writing, there's no question.” (1:148). In the same session, Cliff described how standards emerge,

I think it's important to understand [that] when it comes to standards, procedures, and best practices . . . at some point in the past, it started out as somebody was doing it “that” [a new] way, and someone talked to their neighbor and said, "How are you doing it?" And they talked, and they said, "That's a great idea." So, now two people became “in” [on the new standard]. Pretty soon, instead of just being a practice, it became a *best practice*. And then eventually those people got together to create standards, because they're well respected. And they created the standards based on their own best practices, by hashing around to say, "Well, your best practice is a little different than my best practice, but this standard is loose enough that it lets us both play in a sandbox without offending anybody." So the standard then gets put in place. (1:95)

In a different session, Casper described how emerging standards, such as notifying fire responders that 20 minutes had elapsed since the time of call, gained momentum, “It’s becoming a national standard that a lot of other agencies are using. *We should join the crowd* [emphasis added] . . . because other agencies are having success with it” (2:38).

PSAP leaders confessed that standards sometimes arise due to tragedy. Larry described a particular case from early in his career,

[Standards] change quickly . . . usually due to a national outcry. The Eddie Polec story [Philadelphia, 1994]. Eddie was killed on the steps of St. Sicilia's church, there was more than a dozen calls to 9-1-1 of a large crowd gathering with bats, the dispatchers were curt and rude, Eddie's laying bleeding on the steps of St. Sicilia's church. The PSAP has no commonplace file [listing of business names] to figure out where the church is, and nobody can say that it's on the corner of

“walk and don't walk”. . . . That raised the standards in 911. . . . I used to tell dispatchers when we were training, the one thing you do not want in your career, is to have *Dateline* come walking through the front door and want to interview you. (1:135)

Danisha, reflected on more recent incidents receiving national attention,

So, things like an active shooter incident, you know we've seen them across the country. So, what do we all do? Jump on board, “Hey, what's our active shooter policy? Where are we with this because it could be us?” We've got a large city school. Definitely it could be us. So, we looked at our policy, it was weak. We developed a new policy. [We practiced] an active shooter incident. Did a full scale [exercise]; brought all the agencies in. (4:107)

PSAP leaders warned that standards can become skewed, especially when overreacting to critical incidents. Tyler stated, “Sometimes we over regulate, you know. We try to fix a problem with a policy or whatever when we could have solved it another way sometimes” (4:86). In a different session, Casper struck a similar tone, “We've had a knee jerk reaction from . . . [an incident] that may never be repeated in 25 years, all of a sudden something happened, something went wrong, now we've got to change the procedure for this extreme type situation” (2:47). Cliff warned that larger agencies may have an advantage when creating or updating standards:

You talk about standards being obsolete, and this is a huge problem, and the national standards require people to volunteer their time at NENA or APCO, and there's a very strong possibility sometime those standards can be skewed in a particular way, because only particular agencies have the wherewithal and the

resources to allow their people to be involved in creating those standards. So they could be skewed to larger agencies that might have those resources, and neglect the agencies that are smaller. (1:156)

Lillian joined in on the comment, “smaller agencies might not have the budget to send somebody to a particular [conference], or take them off the [PSAP operations] floor to allow them time to even just get on a conference call” (1:158).

PSAP leaders also warned that standards quickly become obsolete and must be reviewed regularly. Chris stated, “You have to review them. . . . We review our standards every year and they go out to the floor for a review. . . . You need to cover everything” (4:89). Larry commented, “Standards in 911, they’ll change slowly at a snail’s pace” (1:135A). Larry continued later in his session, “a standard can sit in a three-ring binder for years, and it never even be an issue. And when you go back and read the standards, maybe a lot’s changed” (1:149). The constant need to keep up with changes in standards, sometimes driven by technology (discussed below), forced PSAP leaders to become self-taught experts, a theme discussed more thoroughly in the next section.

PSAP Leaders’ Alignment with Evidence-Based Management

Sub-question 4 asked: “How do PSAP leaders’ views align with evidence-based management theory?” Evidence-based management theorists posited the best decisions are made using the best available evidence. Participants routinely discussed the use of local data collected to justify decisions, measure success, or advocate changes to policy. PSAP leaders perceived adaptation of standards with local data was critical to local success. Original research was rarely mentioned or used, but an underlying theme describing the lack of 9-1-1 operational research or the inappropriate application of other

public safety disciplines (law, fire, or medical) to the PSAP environment was consistent across all sessions.

Local data. PSAP leaders advocated the use of local data including, but not limited to, call statistics, quality improvement reviews, and dispatch time benchmarks to improve the performance of their telecommunicators and make decisions regarding standards of care, policies, and staffing. Chris recounted how he used multiple measurements to evaluate performance,

There are so many different things that you are measuring your performance by; looking at your statistics that you use. As you measure your reviews, your evaluations, you're measuring everything, you have to take each thing and put it together as a whole package and see "What's our weak points? What's our strong points?" . . . I think there is not one item at all that is going to take and measure any PSAP. And you have to use multiple tools. If you don't use multiple tools, then you're not taking and measuring it right. (4:4)

In a different session, Byron's agency performed an internal study to test and invalidate a long-standing PSAP standard regarding verifying addresses twice, "We eliminated the piece where we're re-verifying the address, we didn't see any increase in address errors . . . and we saw a decrease in our call processing time" (3:68B). By eliminating those extra seconds, Byron's PSAP saved hours of call processing time over the course of a year allowing for reallocation of scarce resources, "That's beneficial to the agencies, it's beneficial to us, it's beneficial to the citizens" (3:68C). Later, Byron went on to say,

You have to use the evidence and the data that is attached to your demographics. It's not always prudent to look at what's happening in another state, even another

county that borders you, because situations are different, demographics are different. Your fire service, your EMS service, they operate differently. (3:106)

In yet another session, George used the same argument about demographics, but also pointed to geography as a local concern along with call numbers driving staffing:

You have to understand what's going on locally because [of] your demographics. . . . As an example the county we're sitting in right now has little or no water. I come from a county that I'm virtually a peninsula. . . . People laugh when I say that . . . [but] that changes how you're going to deal with stuff, and what [fire apparatus resources] you're looking for because your situations are always different, and you may respond to things differently. Your interaction with other agencies, I think, is always different. And then you look at your numbers, your staffing. Everyone's going to be different. (2:101)

After George's comment, Siobhan and George turned to Casper and asked him if he ever used his call volume data to justify additional staff at his center considering his pitiable comments earlier (see "Staffing and time" above). Below is how the exchange proceeded:

Siobhan: What's your call volume, though? I mean, can you drive for more staffing by call volume?

Casper: I don't know. I've never done one of those.

Siobhan: Because, I mean, that would evidence based, to get you more staffing.

Casper: And I've never really looked. I've considered it, but I've never really looked into it to say, okay, in terms of either phone calls received or complaints processed. (2:103)

Finally, Cliff stated effective implementation of quality care “is taking standards from multiple places, and saying, ‘How do these all play together in our [local] environment to achieve our goal?’” (1:100).

9-1-1 as a unique discipline. During the post-interview coding process, a new theme emerged regarding 9-1-1 as an expertise, unique from other public safety disciplines, which was not an a priori element. Larry put it candidly, “You have people making decisions about 9-1-1 that don't have a clue what 9-1-1's all about” (1:63). Larry followed up his statement a little later,

Most [other] disciplines only think there [are] three: police, fire, and EMS. *They forget that there's a 9-1-1 dispatcher, and those people have to know it all. They have to know police, fire, and EMS, and they have to know the dispatch operations in a 911 center.* (1:69 - 1:70)

PSAP leaders also confessed that they did not read original research on PSAP operations because it did not exist. Most of the secondary research PSAP leaders used were from other disciplines such as the fire, emergency medical, or police sciences. Cliff reflected,

I don't know if I've ever read original research, and then based any kind of decision on it. . . . Yeah, and I also think that the place that you [the researcher] are now, right? The place that the 9-1-1 world is now is different than it was when I was active . . . I think if you would have said, "Hey, go find somebody that has a PHD in 911 call taking”, right? [Larry interjects] They didn't exist! [Cliff] Even today. (1:163 - 1:164)

In a different session, Byron, stated “We can look at something and have it mean something much differently than the fire service could” (3:106A). In yet another session,

George discussed how 9-1-1 has transitioned into a separate and distinct profession, “When I started 20 years ago, road patrol [law enforcement] people were working inside communications, so they understood the flow. Now a new person never sees communications and they don't understand it” (2:72). Going back to Larry, he bemusedly put it this way, “As soon as we went from three-by-five cards and crayons to real live computers, it became a profession, because the computer programming was very specific to the dispatch function” (1:170). PSAP leaders identified themselves as different from the other professions, and actually welcomed participating in original research in order to promote 9-1-1 as an emerging scholarly discipline, something that will be discussed further in Chapter 5.

Other Findings

Participant deliberations did not remain within the neat confines of the research questions. While some of the themes discussed below were partially identified as a priori elements, the themes largely emerged through the iterative cycles of coding leading to new codes and lenses to view them through. Below, we will delve deeper into each new theme with the understanding that some analysis and evaluation of broader meanings will occur in Chapter 5.

Peers. Surprisingly, participants identified peers as a primary resource to create, validate, or update standards of care. Larry recalled how it all started in the late 1990s in NYS,

I think one of the best things that ever happened in the state was the formation of the [New York] State 911 Coordinators Association, because it opened that door to the sharing of knowledge, and typically any time the coordinators got together,

there was the local tour offered of: “Come see my center”. And without a doubt, everybody that went on a tour took something back to their agency that, “Hey, we can use that”. (1:107)

Byron boldly admitted, “We look at best practices. We use input that we get from other 9-1-1 centers, because we're all in this together, so we should probably be sharing and stealing from each other” (3:67). In her session, Danisha profoundly expressed how other PSAP leaders were not only a resource, but also a community,

I used to joke that the best thing about Coordinator conferences was dinner because we're all BS'ing [bull-shitting] about what we do every day and our staff and what goes on. That's how we work. *And we also feel like we're not alone.* (4:94)

Earlier in the discussion regarding standards, both Cliff and Casper (from different sessions) illustrated how peers help promote standard adoption. Here again, is Cliff,

I think it's absolutely vital. *Absolutely vital* for anybody that's in a leadership role in a 911 center to not only talk to their neighbors regularly, but to be involved in at least regional and state organizations to share ideas. . . . *And not only just go, but participate.* (1:104)

Larry, Cliff, and Casper described agencies that did not follow standards or participate in the state 9-1-1 association as “backwards”, Casper elucidated further,

I'll get something on the listserv [NYS 911 coordinators list server e-mail group], and somebody asks a question, and “Okay, maybe that is something to think about”. Or, help them, give an answer of what we do, and then see what other responses somebody gives, and see how ours compares. Because we may, we may

[sic], be doing something in good faith, only to find out that everybody else who answered that same question is saying “No”. Or it reinforces when it's “*Yeah, we're kind of normal . . . Okay, we are doing like others.*” (2:55)

Tyler shared, “In reality, *we think we're so different and we're not . . . we shoot stuff off of each other using our email groups and things like that*” (4:91). When discussing troubling employees, George commented that, “everybody has them” and how he can pick out the same “personality” while visiting another PSAP (2:26).

Participants enjoyed sharing their stories and experiences with each other. In one session, the term “group therapy” was jokingly alluded to, but there was a palpable feeling of comradery at each of the sessions. As stories were told, participants jumped in claiming they had the “same” situation, questioned fellow PSAP leaders on policy details, and offered advice or resources to help solve their fellow participant’s problems. Interestingly, for all the talk surrounding applying national standards to their local resources and data, PSAP leaders generally agreed that “the state” should do more to standardize the quality of service all NYS PSAPs provide to the public.

New York State governance. PSAP leaders felt strongly that the State of New York should take a more active role promoting standardization, providing funding, and leading the state to develop solutions to technical challenges. Cliff advocated for state leadership since NYS had many peculiarities not found in other regions:

In New York State, we face so many more challenges that people in other states don't, between civil service, and lack of funding, and all those types of things. People in other states don't really face those same challenges, so I think it's really important to share that knowledge within the state. (1:114)

Participants felt that the state had a fundamental role in establishing standards of care. Danisha commented how state requirements for EMD finally forced her agency to adopt national standards of care, “It's [EMD] becoming a standard. We want to make sure that we are up to date with the processes that are in other 911 centers. The state could do an audit at any time” (4:57A). George firmly believed all PSAP in NYS should meet the same standards of care:

That's why it's important to have standards at higher levels, if you will. State standards [*sic*]. And New York State's a perfect example. Having a set of standards that county wireless PSAPs have to meet, that every other PSAP doesn't have to meet, there's a perfect example of [why] everything's so diverse. . . .

When you hear stories of 9-1-1 centers that don't have to fall under that state standard with one person in a [PSAP operations] room. So, if that person leaves the room, who's covering [the 9-1-1 calls]? Not delivering EMD. We discussed earlier how important EMD was. So that center doesn't have to deliver EMD? (2:86 – 2:87)

Clark recalled how his agency was “getting our standards from what the state says that we should get” (3:95A) as well as other national organizations previously discussed.

PSAP leaders, especially county PSAPs, did not always agree the state should have a leadership role. Cliff remarked,

15 years ago . . . 57 [county] 9-1-1 coordinators in New York state [would] say, “We don't need a state 9-1-1 coordinator, we can do it ourselves. We don't need the state telling us what to do. . . . Now it's completely opposite, because we need to have coordination. (1:179)

One of the primary reasons behind that shift from local to state governance was the pressing technological needs and costs associated with next-generation 9-1-1. While next-generation 9-1-1 is not within the scope of this study, technology and how it influenced PSAP leader decision-making came up frequently, and not always in a positive way.

Technology. PSAP leaders felt technology was helpful, especially when trying to locate callers (as previously discussed), however participants more often than not described technology as a hurdle or a crutch. Revisiting Chris’s cultural story about his center coming together as a team during a CAD upgrade, the team persevered in spite of the technological “bumps and bruises” the team endured (4:3A). Larry recalled how it was technology challenges that gave birth to the NYS 9-1-1 Coordinators Association,

We had issues with vendors not giving us proper data information on 9-1-1 landline calls. Cellular [phones] hadn't even been thought of yet. . . . This county would fix issues in the database, and then all of a sudden a year later, the issues rose up again, because they [telephone providers] didn't update the database, and they corrupted it with the issues that were corrected in the previous year. That was a huge issue. And when one county's talking to a vendor, it's not a big deal. *When you have 62 counties talking to one vendor, that's a big deal, and they listened.*

And those issues went away, because we had strength in numbers. (1:120)

One of the association’s founding members, Roy Althiser, “figured out that we all have the same problems, we all have the same issues [and said] ‘Let's get together and figure out the same solution’ (1:119).

Other PSAP leaders were critical of telecommunicators over-relying on

technologies such as CAD or not verifying the 9-1-1 data they were getting. Lillian posited, “And the technology aspect comes in, and it's great. It's huge. . . . But I think sometimes they depend too much on the technology, and don't listen to the caller . . . and the technology isn't always 100%” (1:52). Clark warned,

I think this is an important point to make too, as far as performance. We have such great technology now. We have Computer Aided Dispatch. We have computers that literally tell us our job. What happens when the computers fail? (3:42)

Clark then elaborated how a CAD failure during a fire “with a person trapped” caused a telecommunicator to panic. He happened to be walking by, heard the concern, and then instructed his employee to “Go old school” (3:43). Clark felt one measure of a telecommunicator’s performance is how well they react “when something they're using every single day to do their job fails, like a computer” (3:45).

Recent changes in technology and the forecast of more changes to come, worried participants. Tyler complained, “A text-to-911 call takes forever, you know, I mean there's a lot of work in that” (4:114). Lillian commented that national standards of care move slower than technology advancement:

The technology changes so fast, and the standards, because of the research, and the time put into them don't, especially coming from the national organizations with all the review process, and all that. By the time a standard's written, sometimes it's almost obsolete. (1:155)

PSAP leaders viewed technology as a never-ending challenge with both risk and reward.

Primary Research Question and Summary of Results

Coming back to the primary research question: How do NYS wireless PSAP leaders support effective implementation of quality care? The revelations from each sub-question in part, informed the whole. Participant definitions and measurements of quality care centered on PSAP telecommunicators' abilities to quickly and accurately get responders to the appropriate location, sometimes in spite of technology failures. PSAP leaders felt that factors such as buy-in from multiple stakeholder groups and organizational culture were neutral factors (could be either good or bad), whereas factors such as proper training and accreditation were primarily positive. Participants cited lack of funding, time, quality improvement staffing, and dedicated supervisors as the primary obstacles (negative factors) for quality improvement in their PSAP.

PSAP leaders advocated for national standards of care and proposed the State of New York mandate universal standards for all PSAPs, provided PSAP were able to adapt those standards to their unique resources and the state assist with funding. Participant views on using the best available evidence, largely in the form of local data and policy experimentation, aligned with evidence-based theory, but the lack of original scholarly research on PSAP operations highlighted a major gap in academia, especially considering the life and death consequences of failure.

Other findings included the importance of peers to not only reinforce adoption of standards, but also to serve as sounding boards and confidants during challenging times which resonated with the researcher. The importance of both the NYS 9-1-1 Coordinator Association and their call for a state 9-1-1 coordinator is discussed more in Chapter 5, but cannot be understated, especially considering the looming technology changes ahead.

Chapter 5: Discussion

Across New York State, whether you are a traveler on the Thruway, attending a football game in Buffalo, a NASCAR race in Watkins Glen, camping in the Adirondacks, a show on Broadway, or at night in your home, there is an expectation that you will receive quality care when you call 9-1-1. As detailed in Chapter 1, PSAP quality can have life or death implications. Emergencies occur regardless of response agency boundaries, the technical capabilities of the PSAP alerted, or the standards of care employed by the responsible PSAP. According to the results previously discussed in Chapter 4 and incidents discussed in Chapter 1, PSAP quality improvement standards of care can be as random as the incidents that require emergency intervention.

For many who call 9-1-1, it is their first time asking for help from strangers. It can be the worst day of your life and the stranger on the other end of that 9-1-1 connection can make life-altering decisions on your behalf. Perhaps the reason PSAPs and their quality improvement programs have not received a great deal of scholarly attention is because PSAPs, their leaders, and front-line telecommunicators handle a majority of the 240 million 9-1-1 calls that occur annually in the United States of America without complaint (NENA, n.d.-b). Unfortunately, we have no data to either support or refute the previous sentence due to the lack of original research on PSAP operations. This study evaluated PSAP leader perceptions of quality improvement from an evidence-based management theoretical framework while answering the primary

research question: How do NYS wireless PSAP leaders support effective implementation of quality care?

Implications of Findings

The study revealed PSAP leaders consistently defined quality as achieving balance across multiple variables, PSAP quality improvement required staff, time, and relationships where PSAP leaders emerge as scholar practitioners of evidence-based management, and PSAP standards of care developed through peer engagement and consensus at the local, state, and federal levels. The next few subsections will discuss specific key findings and how they related to the literature and what the findings meant within the larger scope of PSAP quality and NYS PSAP governance. Each subsection discusses the highlights of the four sub-question findings. In future sections we will discuss limitations and recommendations based on the key findings of the study.

PSAP quality consistently defined as balance of variables. Throughout Chapter 4, PSAP leaders defined quality in very demanding terms. Participants defined PSAP quality as achieving balance across a continuum of nuanced variables because a single 9-1-1 call may have “99 tasks that need to be done.” Telecommunicators must: (a) Be fast AND accurate, (b) Use their judgement AND follow the protocol, and (c) Utilize all available technology AND prepare for that same technology to fail. Figure 5.1 graphically represents how PSAP leaders reject the notion that their demands represent mutually exclusive dichotomies, but rather, characterize a target along three continua to reach optimum quality. The circle in the middle of the diagram characterizes a range of acceptability where quality can be still achieved while allowing for the variable nature of emergencies.

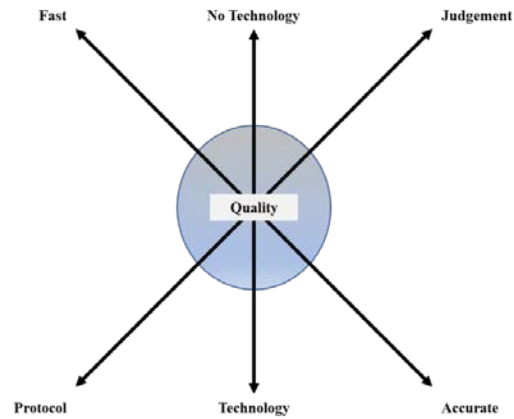


Figure 5.1. PSAP Quality Model.

Interestingly, NYS Wireless PSAP leaders advocated similar definitions of quality offered by telenursing managers in Australia. In both locations and industries, employees viewed leadership instructions as inconsistent demands. For instance, in Chapter 2, we heard a frustrated nurse complain that her managers offered two discordant quality definitions, “Yes, use your clinical judgement but then no, you’ve got to stick to the algorithms” (Russell, 2012, p. 202). Likewise, in Chapter 4, a telecommunicator forwarded a 9-1-1 call to the wrong location because she wanted it to get done quickly, sacrificing accuracy. However, PSAP leaders felt that balance, not dichotomies, represented quality. In both industries, leaders should explicitly explain to employees the need for balance with PSAP leaders using the model described above.

PSAP leaders regularly interchanged terms such as standards, protocols, and policies while defining quality. Considering there is very little literature on PSAP operations, part of this study was to help future researchers learn how PSAP leaders operationalize these terms. For future studies, as discussed in the recommendations section, terms should be defined for participants (qualitative) or subjects (quantitative)

using the definitions provided in the APCO/NENA American National Standards (ANS) documents.

PSAP quality was inconsistently measured. Participants confirmed both PSAP and telecommunicator performance was not consistently measured from county to county. PSAP leaders admitted that quality improvement reviews “take a back burner” to other pressing needs such as training new employees. PSAP leaders valued having a formalized plan for reviews but clearly identified the lack of staffing and time as barriers to fulfilling those plans, something discussed in subsequent sections. PSAP leader sentiments affirmed existing literature claims that good training, constant reinforcement, and constant review were necessary to ensure compliance to national standards of care (APCO, 2013a; APCO, 2015; Clawson et al., 1998; Clawson et al., 2012). PSAP leaders’ recognition that the standards are appropriate, yet sometimes ineffectively applied, will be discussed in the next section regarding implementation factors and in the recommendations section.

PSAP quality implementation required time, staff, culture, and relationships. Participant discussions revealed that evidence-based quality improvement requires time, appropriate staffing of both supervisory and quality improvement positions, a positive organizational culture, and trust-based relationships with stakeholders. As previously discussed in Chapter 2, both time and human resources were identified as costs and as potential barriers to evidence-based management implementations (Crowley et al., 2012; Glaub et al., 2014; Gloppen et al., 2016; Spector et al., 2015; Spiri & MacPhee, 2013; Taylor & Campbell, 2011; Wright et al., 2016). PSAP leaders mirrored the literature citing both time and lack of dedicated resources as barriers to effective implementations.

Participants felt strongly that supervisors should be a separate role unfettered by front line telecommunicator duties. Similar to the literature, PSAP leaders highlighted how supervisors play a critical role when reinforcing evidence-based standards of care (Armstrong, 2012; Bhave, 2014; Russell, 2012; Spector et al., 2015; Taylor & Campbell, 2011). Particularly in Bhave (2014), the frequency of supervisory reviews and discussions with employees resulted in better protocol compliance and reduced counterproductive work behaviors. We previously discussed Russell (2012) above, but it bears reminding that supervisors should be available to help employees achieve balance.

Participants described organizational culture as being both positive and negative indicating that culture was neutral factor, yet critical for successful implementation of evidence-based quality improvement. The literature described accreditation as a positive cultural factor for evidence-based management (Dorseif et al., 2016; Olola et al., 2016; Spiri & MacPhee, 2013). Remarkably, PSAP leaders did not see accreditation as a prerequisite for achieving quality, but rather a helpful process to building the organizational culture to support and sustain evidence-based quality improvement.

PSAP leaders believed building trusting relationships with multiple stakeholders was essential to leverage resources and achieve buy-in, described in the literature as stakeholder engagement. As seen in the literature, PSAP leaders had to engage with senior leaders (Guo et al., 2015; Spiri & MacPhee; 2013; Telep & Lum, 2014) and middle management (Armstrong, 2012; Bhave, 2014; Russell, 2012; Spector et al., 2015; Taylor & Campbell, 2011) in order to succeed. Unlike the literature, PSAP leaders also focused on achieving buy-in from front-line employees. Participants believed being

viewed as a trusted insider was important which was eloquently discussed in Wright et al. (2016). A table depicting implementation factors is in Appendix E.

PSAP leader practices aligned with evidence-based management theory.

Participant findings added support to the current literature regarding evidence-based management theory. PSAP leaders adamantly believed local adaptations to standards using local data helped build trust and justify evidence-based standards of care, as seen above in Wright et al. (2016) and advocated by evidence-based management theorists (Briner & Walshe, 2014; Pfeffer and Sutton, 2006, Rousseau & Olivás-Luján, 2013). PSAP leaders did not always acknowledge their data-driven action research as evidence-based management which was reminiscent of Bartlett and Francis-Smythe's (2016) findings regarding organizational psychologists using evidence-based principles without conscious recognition of theory in practice.

The State of New York should promote PSAP quality. Participant discussions uncovered a shift from local governance to more reliance on NYS for PSAP standards of care improvement. PSAP leaders also affirmed the 9-1-1 standards influence model presented in Chapter 1 with a slight modification: a dashed arrow indicating "PSAP leader peer acceptance" was added after the study based on the Chapter 4 findings. PSAP leaders discussed how the NYS 9-1-1 Coordinators Association, NYS Sheriffs' Association PSAP accreditation standards, NYS county laws, and NYS wireless PSAP regulations successfully led to better standards of care throughout the state, especially evidence-based practices such as emergency medical dispatching (EMD). Participants repeatedly advocated that all PSAPs in NYS, not just county-identified wireless PSAPs, be held to the same standard.

That said, PSAP leaders simultaneously called for the State of New York to help county PSAPs with funding to meet such standards. Recently, the FCC identified that “sufficient public record information exists to support a finding that New York diverted funds for non-public safety uses” as a key finding in its report to Congress regarding abuses of 9-1-1 funding (FCC, December 29, 2017, p. 3). More specifically, the FCC found, “State tax records indicate that in 2016, New York collected approximately \$185,344,986 from the Public Safety Surcharge. During the annual 2016 period, the state awarded approximately \$10 million in grants to counties to support PSAP related costs” (FCC, December 29, 2017, p. 47), meaning the State of New York misallocated over 94.6% of its surcharge revenues. While some of the misallocated revenues did support other public safety programs such as statewide interoperable communications grants, the paltry sharing of state resources, specifically designated for 9-1-1, with the PSAPs that provided such services is beyond alarming and represented an incredulous misrepresentation to taxpayers. We will discuss possible remedies in the recommendations section.

Limitations

Limitations of this study included social desirability factors common to focus groups, perhaps exacerbated by the recent dismissal of a well-known PSAP leader and the fact that the researcher was a peer. The transcripts did show some minor social desirability impacts at the beginning of some focus groups, but barriers quickly broke down as PSAP leaders shared their experiences. The focus group atmosphere may have mitigated social desirability impacts by ensuring participants did “not feel like we’re alone.”

Recommendations

The following section will cover recommendations for policy, academic disciplines, and future studies. For policy, we will begin locally and expand outwardly towards federal governance in keeping with the 9-1-1 standards development model. We will discuss how PSAP operations should become a new public safety scholarly discipline without losing its multidisciplinary roots and how future studies may build upon the lessons from this dissertation.

Local PSAP leader recommendations. Local PSAP leaders should continue using local data and experimentation to improve quality care. Local data such as call volumes, on-air times, and address verification errors can help leaders make more informed decisions regarding policies, procedures, and how best to adapt national standards of care to their local resources. PSAP leaders should use both quantitative and qualitative data to help decision makers.

Evidence-based management is not a panacea and requires a great deal of time to collect, analyze, and present data in a way that is meaningful and enlightening to stakeholders. More importantly, building trustful relationships with stakeholders is critical to implementing any standard of care. While stakeholders may not always understand the data, or even agree with the decisions, they must be able to trust the PSAP leader's intentions. PSAP leaders should continue to loudly advocate for PSAP supervisors and quality improvement staffing through state organizations such as the NYS 9-1-1 Coordinators Association or the local chapters of APCO and NENA. It is by "strength in numbers" and challenging other PSAP leaders to "join the crowd" that our voices may be heard.

State of New York recommendations. The State of New York should review its policy of diverting 9-1-1 revenues to the state general fund. Beginning December 1, 2017, the state is collecting 9-1-1 surcharges on pre-paid cellular devices which will increase the revenues beyond the \$185 million collected in 2016 (NYS Department of Taxation and Finance, n.d.; FCC, December 29, 2017). Raising the percentage of revenues shared with county PSAPs to represent only 10% of the revenue collected would double the current funding allowing PSAPs to add the additional supervisors and quality improvement staff needed to meet national standards of care. Along with the increased funding, the State of New York could require adherence to national standards of care, such as the 2015 APCO/NENA/ANSI comprehensive quality improvement standard, without creating yet another unfunded mandate. The State of New York should fund PSAP operational research and reinstate the PSAP inspection regime it abandoned in 2010 to properly measure the impact of such funding and ensure the counties are complying with the adopted standards. Additional studies, discussed in the following recommendations would build on this study with the benefit of more robust resources.

Federal government recommendations. The FCC should continue providing reports to Congress and publicly criticize states that divert 9-1-1 funding away from PSAPs. The FCC and the executive branch should classify PSAP professionals as protective services in its Standard Occupational Classification (APCO, n.d.) and classify PSAPs as both national security and national transportation interests (the National 9-1-1 Program Office is already a part of the National Highway Traffic Safety Administration). Doing so would allow the executive branch and Congress to withhold grant funds related to the Departments of Homeland Security and Transportation from states that divert 9-1-1

revenues. Currently, the State of New York has little incentive to give up \$175 million (or greater) in annual revenue when faced with no loss in federal revenue for its misallocation of funds. Finally, the National 9-1-1 Program Office should expand its current research activities to PSAP operations with researchers who have experience in both qualitative and mixed method methodologies. The current focus of national organizations on technological issues is critically important, however, if the telecommunicators using the technology are inept, poorly trained, or are not properly informed of performance deficiencies, technology becomes a useless or a malignant tool.

PSAP operations emerging as a scholarly discipline. PSAP operations, leadership, and scholarship are emerging as a separate and distinct discipline deserving of research. In 2013, Gardett et al. (2016) found only 114 original research papers related to PSAP operational research, most of which were focused on medical protocols and not on dispatch operations such as quality improvement. We applaud the *Annals of Emergency Dispatch and Response* for beginning this venture with the first peer-reviewed and original research volume in 2013. Unfortunately, the publication is inextricably linked with the International Academies of Emergency Dispatch which represents a conflict of interest considering its vendor partner, Priority Dispatch Corporation, is one of the largest providers of software and card-based protocols sold to PSAPs worldwide (Sutter et al, 2015). Similarly, APCO and NENA also sell services to PSAPs. Academic journals should create (if they do not exist) and strictly enforce conflict of interest and disclosure policies. An independent research arm consisting of 9-1-1 scholar practitioners, as mentioned above, is sorely needed to ensure PSAPs have access to independent, original,

and peer-reviewed research to promote future evidence-based improvements and critical inquiry regarding their merits.

Future studies. As a more concrete and achievable recommendation, this study should be built upon by NYS DHSES researchers, other states, and PSAP scholar practitioners such as those currently enrolled in the APCO Registered Public Safety Leader (RPL) program or the IAED Communications Center Manager program. Within the State of New York, studies regarding supervisory and quality improvement staffing among NYS PSAPs is sorely needed to identify potential gaps and ensure 9-1-1 funding is adequately meeting quality improvement needs.

Conclusion

PSAP leader participants' perceptions of evidence-based quality improvement programs provided a unique insight into the current state of the 9-1-1 profession. PSAP leaders support effective implementation of quality care by achieving buy-in from stakeholders, building trust as leaders, and using local data to support their decision-making processes. While participants consistently agreed on general definitions of PSAP quality, measuring quality was inconsistent from agency to agency. Time, staffing, and funding were largely seen as barriers to effective implementation, while other factors such as training, reviews, and accreditation were viewed positively. Stakeholder engagement and organizational culture were perceived as neutral, yet instrumental, to success. PSAP leader peer organizations at the state and national levels provided the impetus for change for many participants. Current PSAP leaders are making the transition from personally held beliefs to locally adapted national standards of care, yet that transition needs continued support and funding from state 9-1-1 revenues.

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Appendix A

State 9-1-1 Governance Levels of Authority (NHTSA, 2013)

States	Description	Characteristics
DC	State-level 911 authority owns or operates a single statewide system with a single, state-operated PSAP	Washington, DC, is the only independent entity and is counted as a “state” for the purpose of categorization. In New Hampshire and Rhode Island, the 911 authority is part of another state agency.
CT, DE, MA, ME, NJ, VT,	State-level 911 authority owns/operates a single statewide system, and funds and operationally supports PSAPs	Vermont operates independently. In Maine, Massachusetts, Delaware, Connecticut, and New Jersey, the 911 authority is part of another state agency.
AL, AK, AZ, CA, FL, GA, HI, ID, IL, IN, KS, MD, MI, MN, MT, NH, NM, NY, NC, OK, OR, PA, RI, SC, SD, TN, UT, VA, WA, WV, WY	State-level 911 authority with statewide geographic planning, coordination, and funding responsibility for full scope of 911	Only one of the 31 state 911 programs in this category operates as a completely independent state agency or function. The remainder all are part of another state agency, though beyond that there is a great deal of diversity. For most states in this category, the 911 function is a full-fledged organizational component of another state agency, and works within the context and authority of that agency. However, a few state programs are simply attached to another state agency for administrative support, and otherwise operate independently. In some cases there is also a separate board or commission that sets policy and exerts decision authority.
TX	State-level 911 authority with less than statewide geographic planning, coordination, and funding responsibility for full scope of 911	Texas is the only state in this category, and operates as an independent state agency. In those parts of Texas outside of the state program’s geographic responsibility, regional and/or local 911 authorities have independent responsibility.

AR, IA, KY, MS, NE, OH, WI	State-level agency or board with statewide responsibility for a limited aspect of 911 (generally wireless)	Mississippi and Arkansas reflect independent agencies or boards of this sort; while Nebraska, Ohio, Iowa, Kentucky and Wisconsin are part of a larger state agency.
CO, ND	Informal state-level 911 focus or coordination mechanism	Two states fall into this category. North Dakota and Colorado.
LA, MO, NV	No state-level 911 focus or coordination mechanism	Three states fall into this category: Missouri, Louisiana and Nevada.

Appendix B

PSAP Leader Perceptions A Priori Code Book			
Domain	Code	Description	Examples
9-1-1 Technology	ADV-911-TECH	9-1-1 Technology as an impetus to changing operations	Adoption of Enhanced 911, Wireless 9-1-1, Next Generation 9-1-1
9-1-1 Technology	AVOID-TECH-CHG	Purposefully avoiding upcoming technological changes	Delaying implementation, waiting for guidance, waiting for funding
Accreditation	ADV-ACR	Advocating Accreditation	Advocating Accreditation
Accreditation	ASS-ACR	Assessing Other Agencies	Assessing other agencies for compliance to accreditation standards
Accreditation	DEV-ACR	Developing Accreditation Standards	Developing accreditation standards
Accreditation	MEET-ACR	Meeting Accreditation Standards	Meeting Accreditation Standards
Accreditation	MNT-ACR	Maintaining Accreditation	Maintaining Accreditation
Accreditation	MOD-ACR	Moderating Organizational Culture	Accreditation as moderating the organizational culture, typically in a positive way to reduce resistance to evidence-based practices or management

Accreditation	REJ-ACR	Rejecting Accreditation Standards	Rejecting Accreditation Standards
Accreditation	SE-ACR	Seeking Accreditation	Seeking Accreditation
Accreditation	VALU-ACR	Valuing Accreditations Standards	Valuing Accreditations Standards
Civil Litigation	ADV-P-STA	Advocating 9-1-1 standards	Political activity, lobbying , internal discussions advocating standard adoption / compliance
Civil Litigation	ALL-NEGL	Alleging Negligence	Reports of PSAP staff misconduct
Civil Litigation	INS-LITI	Insulating from Litigation	Policy statements, procedures for handling complaints
Civil Litigation	LIT-P-STA	Litigating 9-1-1 standards	Civil or criminal cases related to PSAP policies, procedures, or standards
Civil Litigation	REA-ACCU	Reacting to Accusations	Complaint investigations, responses to allegations
Costs	COST-CAP	Costing Capital Investment	Costing Capital Investment
Costs	COST-HR	Costing Human Resources	Costing Human Resources
Costs	COST-POL	Costing Political Capital	Costing Political Capital
Costs	COST-PRI	Prioritizing Costs	Prioritizing Costs
Costs	COST-TIME	Costing Time	Costing Time
Costs	EV-BEN	Evaluating Benefit	Evaluating Benefit
Costs	EV-COST	Evaluating Cost	Evaluating Cost
Critical Incidents	AT-TO MED	Attending to Media / Public Inquiry	Press releases, media briefings

Critical Incidents	DEF-CR-INC	Defining Critical Incidents	Mention of "critical incident", mention of "defining moment"
Critical Incidents	INV-INC	Investigating Incidents	Internal investigations, external investigations
Critical Incidents	LEARN-P-INC	Learning from past incidents	After-action reports, self-initiated rather than reactionary
Critical Incidents	OVER-P-INC	Overreacting to incidents	Major changes to policy in response to rare incident, "punishing" all PSAP employees for action for one employee
Critical Incidents	REP-ERR	Repeating Errors	Repeated errors, multiple complaints for same issue
Employees	BE-EMP	Being Employees	Participant describes or relates experiences as a employee
Employees	CONV-EMP	Convincing Employees	Attempts to persuade employees
Employees	CRIT-EMP	Criticizing Employees	Criticizing middle employees
Employees	DIS-EMP	Disobeying Employees	Disobeying or undermining employees
Employees	ENG-EMP	Engaging Employees	Contacting, meeting with, or seeking input from employees
Employees	FLW-EMP	Following Employees	Following decisions of employees
Employees	PRA-EMP	Praising Employees	Praising middle managers

Evidence-Based Management	ADP-RES	Adapting Research	Adapting existing research to current problem or issue
Evidence-Based Management	COL-EV	Collecting Evidence	Collecting local data, collecting research
Evidence-Based Management	CRE-EVID	Creating Evidence	Creating local data collection processes

Evidence-Based Management	EVA-EV	Evaluating Evidence	Evaluating evidence including but not limited to local data, research findings, or anecdotal experiences. Not mutually exclusive.
Evidence-Based Management	EVA-RES	Evaluating Research	Evaluating applicability of research to current problem or issue. Evaluating research methodology
Evidence-Based Management	LOC-RES	Localizing Research	Conducting research or replicating research at local agency.
Evidence-Based Management	MAK-DECSIO	Making Decisions	Making a decision based on evidence or research
External Facilitators	ACC-EF-FIND	Accepting EF Findings	Accepting external facilitator findings as valid or necessary
External Facilitators	ADP-EF-FIND	Adapting EF Findings	Adapting external facilitator findings to organizational needs or culture
External Facilitators	BU-TR-EF	Building Trust as EF	Building trust with organizations or stakeholders as an external facilitator
External Facilitators	ENG-EF	Engaging with EF	Contacting, meeting with, or seeking input from external facilitators
External Facilitators	EST-REL-EF	Establishing Relationships as EF	Establishing individual relationships as external facilitator

External Facilitators	EV-EF	Evaluating EF	Evaluating or setting criteria for external facilitators or consultants
External Facilitators	REJ-EF	Rejecting EF Findings	Reflecting external facilitator findings

External Facilitators	SEL-EF	Selecting EF	Processes for selecting external facilitators
Governance	ADV-GO-STR	Advocating Governance Structures	Lobbying or advocating for creation, strengthening, or maintaining a governance structure to oversee 9-1-1 operations
Governance	ADV-LE	Advocating Legislation	Participant advocates changes to legislation to change adopted standards, funding mechanisms, not limited to quality improvement
Governance	DEN-LO-GOV	Denying Local Governance	Local agency / municipal governance oversight not required or required at different level of government
Governance	DEN-NA-GOV	Denying National Governance	Federal governance oversight not required or required at different level of government
Governance	DEN-ST-GOV	Denying State Governance	State governance oversight not required or required at different level of government
Governance	EST-GO-STR	Establishing Governance Structures	Local agency / municipal governance oversight not required or

			required at different level of government
Governance	FUN-STAND	Funding Standards	Tying standard compliance to funding, such as 9-1-1 surcharge revenues
Governance	MAN-STA	Mandating Standards	Formal adoption of standards by law or regulation by local, state, or federal governments
Governance	REQ-LO-GOV	Requiring Local Governance	Requires local agency / municipal governance oversight, not mutually exclusive of other levels of government
Governance	REQ-NA-GOV	Requiring National Governance	Requires federal governance oversight, not mutually exclusive of other levels of government
Governance	REQ-ST-GOV	Requiring State Governance	Requires state governance oversight, not mutually exclusive of other levels of government
Governance	SHARE-CU-GOV	Sharing Current Governance	Participant describes current governance model with group
Middle Management / Supervisors	BE-MM	Being MM-Sup	Participant describes or relates experiences as a middle manager
Middle Management / Supervisors	CONV-MM	Convincing MM-Sup	Attempts to persuade middle managers

Middle Management / Supervisors	CRIT-MM	Criticizing MM-Sup	Criticizing middle managers
Middle Management / Supervisors	DIS-MM	Disobeying MM-Sup	Disobeying or undermining middle managers
Middle Management / Supervisors	ENG-MM	Engaging MM-Sup	Contacting, meeting with, or seeking input from middle managers
Middle Management / Supervisors	FLW-MM	Following MM-Sup	Following decisions of middle managers
Middle Management / Supervisors	PRA-MM	Praising MM-Sup	Praising middle managers
Organizational Culture	ADV-CUL-CNG	Advocating Culture Change	Advocating change in organizational culture of PSAP agency
Organizational Culture	CRIT-CUL	Criticizing PSAP Culture	Criticizing organizational culture of PSAP agency
Organizational Culture	ID-CUL-SYM	Identifying Cultural Symbols	Identifying organizational culture symbols of PSAP agency (e.g., badge, uniform, headset, etc.)
Organizational Culture	PRA-CUL	Praising PSAP Culture	Praising organizational culture of PSAP agency
Organizational Culture	SET-CUL-EXP	Setting Cultural Expectations	Setting expectations of employees using organizational culture of PSAP agency
Quality	ADP-QI-PRO	Adapting Quality Program	Adapting quality improvement program to local agency needs

Quality	DEF-QUAL	Defining Quality	Describing what quality means to participant
Quality	ID-QUAL-EB	Identifying Quality as EBM / EBP	Participant making the connection between EBM or EBPO and quality improvement
Quality	MEA-QUAL	Measuring Quality	Instrumentation of quality, metrics, evaluation reports
Quality	REI-QUAL	Reinforcing Quality	Reinforcing quality through reward or emphasizing intrinsic value
Quality	RES-QUAL	Researching Quality	Researching quality improvement programs or evaluation methods
Quality	SET-QU-EXP	Setting Quality Expectations	Establishing criteria, publishing criteria
Quality	STAFF-QUAL	Staffing Quality	Creating or staffing quality improvement positions
Research Access	ACC-LIB	Accessing Libraries / Higher Ed	Accessing Libraries / Higher Ed
Research Access	ACC-OL	Accessing other PSAP Leaders	Accessing other PSAP Leaders
Research Access	ACC-RES-DB	Accessing Research Databases	Accessing Research Databases
Research Access	ATT-CONF	Attending Conferences	Attending Conferences
Research Access	JOIN-PRO	Joining Professional Organizations	Joining Professional Organizations
Research Access	SU-PRJ	Subscribing to Professional Journals	Subscribing to Professional Journals

Research Skills	BEN-OA	Benchmarking Other Agencies	Benchmarking using other agency standards, protocols, or programs as the example
Research Skills	LA-RES-SK	Lacking Research Skills	Lacking Research Skills
Research Skills	LEARN-RES-SK	Learning Research Skills	Learning Research Skills
Research Skills	PR-RES-SK	Providing Research Skills	Providing Research Skills
Research Skills	RES-L/R	Researching Laws / Regulations	Researching Laws / Regulations
Research Skills	RES-PRJ	Researching Professional Journals	Researching Professional Journals
Research Skills	RES-SCJ	Researching Scholarly Journals	Researching Scholarly Journals
Research Skills	RES-WEB	Researching Websites	Researching Websites

Senior Leaders	BE-SL	Being SL	Participant describes or relates experiences as a senior leader
Senior Leaders	CONV-SL	Convincing SL	Attempts to persuade senior leaders
Senior Leaders	CRIT-SL	Criticizing SL	Criticizing senior leaders
Senior Leaders	DIS-SL	Disobeying SL	Disobeying or undermining senior leaders
Senior Leaders	ENG-SL	Engaging SL	Contacting, meeting with, or seeking input from senior leaders
Senior Leaders	FLW-SL	Following SL	Following decisions of senior leaders
Senior Leaders	PRA-SL	Praising SL	Praising senior leaders
Standards of Care	ADP-STA	Adapting Standards	Adapting standards to local agency needs
Standards of Care	ADV-STA	Advocating Standards	Advocating for adoption or compliance to standards
Standards of Care	DEF-STA	Defining Standards	Defining standards or protocols
Standards of Care	DEN-ST-VAL	Denying Standard Validity	Stating a standard should not apply or is not feasible
Standards of Care	DEV-NEW-STA	Developing New Standards	Development or creation of standards or procedures
Standards of Care	EM-STA	Emerging Standards	Emerging, but not adopted or formally in development
Standards of Care	QUALIFY-STAN-MAK	Qualifying Standard Makers	Mention of qualifications of standard makers or lack of qualifications

Time	ADD-TIME	Taking Additional Time	Tasks, protocols, or programs take more time than prior to implementation (projected or after the fact)
Time	ADV-TIME	Advocating Time Commitments	Advocating that time commitments are worth benefit
Time	ID-TIME-COST	Identifying Time as Cost	Expressions that time costs money or expressions of time as a non-renewable resource / commodity
Time	LA-TIME	Lacking Time to Meet Standards	Lacking time to meet standards, protocols, or program commitments
Time	REJ-TIME	Rejecting / Devaluing Time Commitments	Statements or feelings that time required to meet standards, protocols, or program is too high a cost or benefits are not worth time investment
Time	SET-TIME-PRO	Setting Programmatic Timeframes	Setting timeframes to meet for standards, protocols, or programs including but not limited to time to answer calls, time from call to dispatch, timeframe for reviews to be completed,

			timeframes to meet programmatic goals
Training Factors	ADP-TR	Adapting Training	Adapting Training
Training Factors	DEN-TR	Denying Training Applicability	Denying Training Applicability
Training Factors	FUN-TR	Funding Training	Funding Training
Training Factors	INT-PR-TR	Internalizing Previous Training	Internalizing Previous Training
Training Factors	LA-TR	Lacking Training	Lacking Training
Training Factors	PR-EX-TR	Providing External Training	Providing External Training
Training Factors	PR-IN-TR	Providing In-Service Training	Providing In-Service Training
Training Factors	STAFF-TR	Staffing Training	Staffing Training
Trusted Insiders	BU-TR-TI	Building Trust as TI	Building trust with other insiders or within organizational culture
Trusted Insiders	FAIL-TI	Failing as TI	Failing to become a trusted insider or building trust
Trusted Insiders	ID-TI	Identifying TI	Participant identifying as a trusted insider
Trusted Insiders	NEG-EV-TI	Negotiating Evidence as TI	Negotiating the validity of evidence as a trusted insider
Trusted Insiders	PRES-EV-TI	Presenting Evidence as TI	Presenting evidence as a trusted insider

Appendix C

Focus Group Opening

Opening Remarks (Paraphrase): Thank you for joining me today. I asked you all here today to discuss PSAP quality improvement from a NYS wireless PSAP leader perspective. You were all selected based on your current job description as experts in the matter. Your individual feelings, thoughts, and ideas on this topic are very important. You all filled out consent forms to participate in the study which included a promise by me to keep your information confidential. My hope is that we all respect that confidentiality, so we can all speak freely and ensure what we hear today are people's actual feelings, thoughts, or ideas and not necessarily the official policy of their agency. I am recording these sessions, so we can transcribe what is said today into text for analysis. I may be contacting each of you later to ensure the transcription is correct. Does anyone have any questions or concerns before we begin? (Answer any questions). Alright, first question . . .

Appendix D

Organizational Questionnaire

1. What is your pseudonym? _____
2. What is the population (to nearest 5,000) of your county? _____
3. To nearest 1,000, how many 9-1-1 calls did your PSAP receive in 2016? _____
4. Please indicate which discipline(s) your PSAP serves as the **primary calltaking entity** in your county (check all that apply)
 - a. Police
 - b. Fire
 - c. EMS
5. Please indicate which discipline(s) your PSAP serves as the **primary dispatch entity** in your county (check all that apply)
 - a. Police
 - b. Fire
 - c. EMS
6. Please indicate which discipline(s) you perform routine randomized **quality improvement reviews for calltaking** (check all that apply)
 - a. Police
 - b. Fire
 - c. EMS
7. Please indicate which discipline(s) you perform routine randomized **quality improvement reviews for CAD Entry** (check all that apply)
 - a. Police Calls for Service

- b. Police Traffic Stops
 - c. Fire
 - d. EMS
8. Please indicate which discipline(s) you perform routine randomized **quality improvement reviews for compliance to dispatch policies** (check all that apply)
- a. Police Calls for Service
 - b. Police Traffic Stops
 - c. Fire
 - d. EMS
9. Do you use vendor generated protocols / software / procedures? _____. If so please indicate the vendor(s) next to each discipline.
- a. Police _____
 - b. Fire _____
 - c. EMS _____
10. Are you and accredited PSAP? _____. If so list your accreditations.
- a. Police _____
 - b. Fire _____
 - c. EMS _____
 - d. Other _____
11. Do you have dedicated staff whose primary duties are quality improvement / quality assurance? _____.
- a. If so, how many positions was your PSAP authorized in 2016? _____

Appendix E

Table of PSAP Quality Improvement Factors

Table E1

PSAP Quality Improvement Factors

<u>Positive</u>	<u>Neutral</u>	<u>Negative</u>
Training	Organizational Culture	Time
Reviews	Stakeholder Engagement	Staffing
Accreditation		Funding