Individual and Organizational Uses of Evidence-Based Practice in Healthcare Settings

by

Henry Alan Fingerhut

B.S. Physics, Georgetown University (2010)
S.M. Technology and Policy, Massachusetts Institute of Technology (2015)

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Signature of Author: ....
Institute for Data, Systems, and Society
January 10, 2020

Certified by: ....
John S. Carroll
Gordon Kaufman Professor of Management
Doctoral Committee Chair

Certified by: ....
Susan S. Silbey
Leon and Anne Goldberg Professor of Humanities, Sociology and Anthropology
Doctoral Committee Member

Certified by: ....
Jayakanth Srinivasan
Research Associate Professor, Questrom School of Business, Boston University
Thesis Supervisor

Accepted by: ....
Stephen C. Graves
Abraham J. Siegel Professor of Management
Graduate Officer, Institute for Data, Systems, and Society

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ABSTRACT

In the three decades since its introduction, Evidence-Based Practice (EBP) has become standard clinical practice and the subject of targeted interventions at all levels of the health system. Despite its prevalence, EBP is frequently challenged on philosophical, practical, empirical, and normative grounds. And EBP is often underused in practice relative to the considerable investment in training and sophisticated organizational interventions to implement EBP.

In this dissertation, I identify what the concept of EBP means to health system stakeholders as a partial explanation for this persistent gap in EBP use and implementation outcomes. Through interviews with clinicians and healthcare administrators, I identify how providers and organizations use EBP in practice to clinical ends and in inter-professional relationships.

First, I find that in contrast to the theoretical model, stakeholders vary in how they operationalize EBP for individual-level clinical use. Stakeholders endorse a range of what I call *implicit mental models of EBP* that imply different approaches to clinical decision-making. Respondents' implicit mental models of EBP each emphasize an incomplete aspect of the full EBP model: *Resource-Based EBP* emphasizes specific evidence artifacts, *Decision-Making EBP* emphasizes the decision-making process, and *EBT-Based EBP* emphasizes specific Evidence-Based Treatments. These implicit models represent the decision inputs, process, and outputs, respectively.

Second, I describe how and why healthcare organizations conduct EBP interventions, despite its initial design as an individual-level clinical decision-making model. I document a range of different organizational *EBP activities and interventions,* including disseminating resources, training providers, and implementing local standards. These organizational EBP activities both support individual EBP use and address broader organizational ends, which may conflict.

Finally, EBP takes on social and inter-professional meanings beyond its intended scope as a clinical decision-making model, which emerge in context and affect how providers understand and use EBP. Specifically, providers may *renounce their standing to evaluate evidence*, *demonstratively use EBP*, and *administrators claim standing to evaluate evidence*.

This dissertation therefore demonstrates the varied uses of EBP that emerge in practice, contributing to our understanding of the challenges and contradictions that arise in applying general knowledge to individual cases and systematizing strategies for the same at the organization level.

Doctoral Committee:

John S. Carroll (Chair)
Gordon Kaufman Professor of Management
MIT Sloan School of Management

Susan S. Silbey
Leon and Anne Goldberg Professor of Humanities, Sociology and Anthropology
Professor of Behavioral and Policy Sciences, MIT Sloan School of Management

Jayakanth Srinivasan (Supervisor)
Research Associate Professor
Questrom School of Business, Boston University

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Chapter 1 - Introduction

When Evidence-Based Practice (EBP) was introduced in 1992, its developers, a group of clinical scholars and medical school faculty, described it as "a new paradigm" for the practice of medicine (Evidence-Based Medicine Working Group 1992:2420) based on "the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients" (Sackett et al. 1996:71). In the three decades since, it has become standard practice for many doctors and has reached all levels of the health system, with targeted interventions conducted by clinical and hospital managers, health system administrations, professional societies, and medical schools (e.g., Institute of Medicine 2008), frequent criticism notwithstanding (Cohen, Stavri, and Hersh 2004). EBP has been challenged for its use in standardizing medicine, especially when used by organizations, which is at tension with the emphasis on individual clinical decision-making in the initial definition above. Why has this concept generated so much activity, discussion, and controversy, and where does it stand today?

1. Evidence-Based Practice at the individual level: A paradigm with varied interpretations

To begin, let's consider three clinicians' experiences with EBP.

* * *

Dr. Andrews (all names are pseudonyms) is a third year Family Medicine resident at an urban academic medical center with a diverse patient population. She recently began conducting 20-minute clinical sessions, to become adept at the pace of real-world clinical visits. She finds that with many of her patients, she spends up to half the session translating patients' accounts and medical information, via telephone interpreters. She and her colleagues regularly exchange strategies to deal with these logistical challenges, for example using Google Translate to translate patient instructions back and forth between English and the patient's language until it converges, a process that she estimates she can do in three of the twenty minutes in the session and greatly improves patient understanding of clinical instructions.

Despite these time constraints, she regularly conducts EBP and believes EBP is an important part of what it means to be a physician. Especially in her department, EBP is integral to clinical practice. She says "I think we're very proud here that we use Evidence-Based Medicine [EBM][1]," thanks in particular to the guidance and leadership of an expert in the field located at their center.

She incorporates EBP into her clinical workflow in most cases. She does so by regularly consulting clinical reference software during the clinical session—it is important enough to spend some of the limited number of minutes she has available in the clinical session on such consultation. She frequently consults Dynamed, one such tool featuring a database of systematic reviews, national guidelines and individual

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[1] Evidence-Based Practice (EBP) was later introduced as a multi-disciplinary application of the Evidence-Based Medicine (EBM) concepts to other fields of healthcare, including psychology and social work. I use the later, more comprehensive term of EBP for all but references to historical EBM documents and direct citations.

articles to dig deeper when necessary. She says she would rarely consult individual research articles directly, though she has been thoroughly trained in evaluating research in both medical school and residency. As one of her colleagues explained:

> But … these individual studies that I sometimes will look at, don't affect the way that I practice as much. Because I find that I can find an article that can support whatever decision I make, as long as it's medical reasonable, but there are very few studies that really fit our criteria for changing our practice.

This process of consulting evidence databases is so integral to Dr. Andrews' practice that she says that she would not prescribe medication for any patient without looking at Lexicomp, one of the clinical reference tools she uses regularly. She says:

> I would never want my doc to just prescribe a med off the top of their head. I don't care how many times they've prescribed it.

She says that she and her preceptors would regularly pull up the evidence together while making clinical decisions. There are also occasions where this process of regularly looking at evidence in Dynamed or Lexicomp has led her to suggest a new course of clinical action to her attending physicians, and after going over the evidence together, they agree to proceed accordingly.

To Dr. Andrews, EBP sets the bounds for how she can adjust treatments in the interest of the patient, where she can "[bend] that [guideline] a little bit if the intervention causes no harm." She says that, for example:

> Something I think about a lot is patients who want to use, like guaifenesin for a cough. There's not a lot of great evidence behind it, that comes down to patient centered decision making, where I'll say to them, not a lot of great evidence, but if you're the kind of patient that wants to use this medication to make yourself feel better via placebo effect — I don't say it like that — then it's fine, because it's not going to cause harm. And that's a different way that I take the Evidence-Based Medicine into account, where we're discussing it still, and I'm making it clear that what I'm about to do doesn't really have any evidence behind it, but anecdotally some people say it helps them.

She jokes that "You know I find myself having dreams about Evidence-Based Medicine," but then concludes "it's like the heart of this place."

* * *

Dr. Bertrand is an Internal Medicine resident, also in his third year, at a different urban academic medical center. He thinks it is important to use EBP, regularly does so, and says he is highly "pro-evidence." He views EBP as an indication of a new generational shift: he comes from a family of doctors and his grandfather certainly would not have agreed with an external source dictating how to practice. As he explains:

> You know, I'm pro-evidence. There's a generational thing, at times. I'm a third generation MD and my grandfather would have just been so insulted that anyone else would have told him anything else to do about how to practice medicine [laughs]. So it's just this very macho-ish idea of what it meant to be a doctor.

For Dr. Bertrand, individual research studies hold significant weight. He enjoys knowing about the history of the research and understanding the specific research papers that merit tidal shifts in clinical practice, saying:

> I love knowing why we think things are facts, you know … that we can cite, like *this is the study* that this is why we think that we should be doing this versus that. (emphasis added)"

For him, individual research studies are particularly weighty and hold a lot of power in interactions with other providers, particularly attending physicians. He describes how as a medical student, he would occasionally "drop a citation" into clinical notes to make the case for a clinical decision he favored, to demonstrate to attending physicians that he was reading the literature and able to support his argument. His residency training emphasizes interaction with the research. He says they frequently have journal club meetings, where residents read and discuss primary research articles.

He rarely has time to read all the evidence he would like to, but occasionally will spend weekends trying to catch up on journal articles. However, when he doesn't know what to do in a clinical case, he will try to spend a little bit of his personal time looking up primary articles. He says there are limitations to the application of research evidence, saying:

> You know there's always limitations to what evidence can show you, it's not that there's going to be great randomized trials for everything out there, but, whatever degree of certainty can be ascertained by studying it...

Of course, interacting with the literature is not practical for most clinical questions, and there are many routine clinical activities that providers are familiar with and do not require looking up the evidence. He says:

> And certainly, if there's a real question that people don't know the answer to, they'll go and find an article that supports what you are trying to, the case that you're trying to make for one course of action. That happens with some frequency. But there's also just lots of things where you just need a quick reference and you don't need to go spending an hour deep diving into the literature or something like that.

Instead, for most clinical questions, he will use clinical reference tools like UpToDate, though he thinks that using secondary sources is not as thorough as looking up the literature yourself. He would consult specific research articles on his own time only for particularly complicated cases. He says:

> I mean you can't do that for everything, it would be unnecessary. But certainly, if you've got a puzzling case or just something that's different, you know, always got to be reading up on things, and certainly that's more like you've got half an hour kind of in the afternoon to look things up, or go home at night and find some evidence and search a little more deeply...

He describes UpToDate as a repository of "in depth articles on, and pretty good literature-heavy articles on pretty much any topic that you can come up with," and explained how he could click through to eventually find the underlying evidence for whatever issue he was reading about, "it links to the articles that it's citing, it's all very easy to just keep going further and further down the rabbit hole."

One challenge he describes in applying evidence is that even in a relatively straightforward case, such as colorectal cancer screening, with clear guidelines that are, "quotable by most everyone," the ways they apply that information in practice:

> probably does end up varying a lot more than you'd imagine ... And then again after you're out of med school, you don't have a lot of opportunity to see how other people do business in their room with their patients.

Besides the occasional opportunities for sharing individual citations and other resources with colleagues, many aspects of EBP are highly individualized for Dr. Bertrand, with limited opportunity to exchange in detail with colleagues about strategies for conducting EBP.

* * *

Dr. Carter is a clinical psychologist, who trained in a program that focused strongly on Evidence-Based Treatment. He describes EBP as an important part of care for any clinical psychologist, particularly those who are PhD-trained, because they are expected to have research inform practice and vice versa. He describes his clinical psychology program as an intensive one that emphasized research. This program emphasized the importance of using Evidence-Based Treatments, specific psychotherapies that have been arranged into treatment manuals and tested empirically. Evidence-Based Practice has been very important to him since that time. Evidence-Based Practice was synonymous with conducting specific treatments. As he described "my program as I said was very … research heavy. Like it was [a] very into teaching only Evidence-Based program."

For him, EBP depends on the confidence associated with knowing that a treatment has been studied empirically. As he describes:

> So for any given condition, in treating it, we should try and at least use a treatment that has been subject to some empirical investigation, and has been tested and showed to work, essentially, to be efficacious. And obviously anyone would want that treatment, if there was something [else] that's never been examined or never been tested, or hasn't been shown to work. And so the idea that all good providers should be aware of what's been tested and use those treatments preferentially, makes a ton of sense.

However, as a student he never interacted with the evidence himself, and did not know any colleagues who did. As he describes:

> No one is like oh on my Saturday night I'm going to pull up all these articles and print them out and read the fine print, no one's doing that, no one ever does that. [laughs] I didn't do that in grad school, no one does that. You're like oh the treatment guidelines say this. And so therefore clearly someone has read it at some point or someone has done the work, and therefore I'll just take their word for it. Which makes sense in a way.

His approach to EBP changed when he began conducting research during his program, partnering with an adviser who needed assistance on a research project. This was his first exposure to the evidence underlying the treatments he was using, and he was not satisfied with what he was observing. He began questioning the evidence for those treatments he encountered. He says:

> I had to, for that reason, go into the literature for the first time, and actually start reading some of these studies. And this is important because until then I'd had the same kind of narrative that everyone else had had. Because as a grad student, I mean who has time right to read the synthesis of all these studies? I didn't, and I'm guessing of course no one else does unless they have a job such as a postdoc requiring them to do it. And so I myself had been carrying this real narrative of okay we've cracked the code, even though I'm not really seeing it in practice, but it seems like maybe I'm just too young or I'm still too new at this and if I really just stick to it and get the hang of it it'll all come together.

The experience conducting clinical research has led him to rethink what it means to use EBP in his clinical practice, as he questions the bounds and applications of the treatments he is trained in, and

determines his approach to considering, applying, and potentially adapting empirically tested treatments. But he now conducts this process on his own, developing his own approach to EBP in contrast to the one he learned in his training.

* * *

These three examples demonstrate how broad, varied, and at times contradictory the meaning of EBP has become in clinical practice. These three providers have all received education in EBP, believe it is important, and use it consistently. And yet they all do different things under the banner of EBP, consulting different types of resources, at different times and for different reasons, with different implications for the clinical decisions they make (Table 1.1). These views about EBP also impact the relationships they have with clinical colleagues and with their organization in different ways.

Table 1.1. Three varied uses of EBP at the individual level in practice.

Dr. Andrews	Dr. Bertrand	Dr. Carter
Family Medicine resident	Internal Medicine resident	Clinical psychologist
"Very proud" to use EBP	"Pro-evidence"	"Obviously anyone would want" Evidence-Based Treatments
Rarely consults individual articles	Ideally consults individual articles	"No one" consults individual articles
Weighs criteria for changing practice	Articles show why we should do this vs. that	Knows which treatments are "evidence-based"
Always consults references tools at point of care for prescribing	Rarely has the time, uses free weekends to read about complex cases	Follows Evidence-Based Treatments

2. <u>Evidence-Based Practice at the organization level: Quality improvement interventions with varied stakeholder responses</u>

Organizations also rely on EBP in interventions to improve care quality. At the organization level too, stakeholders have different understandings of what EBP means and how it should be used.

* * *

Since the early 2000s, the Veterans Health Administration (VHA) has increasingly incorporated EBP in veteran health policy (Watkins et al. 2011). The VHA and Department of Defense (DoD) jointly developed the VA/DoD Clinical Practice Guidelines and Evidence-Based Syntheses for at least six conditions including PTSD, among the most common presenting conditions among veterans. Beginning in 2008, the VHA conducted system-wide training and dissemination programs for the two PTSD treatments

with the most empirical support: Prolonged Exposure (PE) and Cognitive Processing Therapy (CPT), and developed policies mandating that these treatments be made available in all VHA settings and offered when clinically appropriate (Department of Veterans Affairs 2012, 2013; Karlin and Cross 2014).

The VHA carefully designed the PE/CPT implementation program in accordance with the implementation science literature, incorporating sophisticated implementation strategies at the policy, provider, local system, patient, and accountability levels (Karlin and Cross 2014). The VHA also established research programs to formally evaluate implementation and program sustainment outcomes (Rosen et al. 2016; Sayer et al. 2017).

Despite the program's attention to implementation theory, implementation outcomes have been mixed. From some reports, PE/CPT uptake appears high; one study reported weekly use of PE and CPT at 85% and 78%, respectively, of VHA providers surveyed (Finley et al. 2015). However, others report that many VHA sites have not incorporated PE/CPT into the standard of care, and clinicians regularly deviate from treatment protocol or select alternative treatments (Cook et al. 2014). One study found high site-level variation seven years into the program, with a range of 14% to 59% of patients receiving CPT or PE in one clinic's PTSD team (Sayer et al. 2017). Similarly, a 2010 study of six New England VHA outpatient centers estimated that only 6.3% of newly enrolled patients received at least one session of PE or CPT (Shiner et al. 2013).

On the ground, clinicians have mixed sentiments about the program, as documented in a qualitative study of the implementation process (Cook et al. 2013). Some clinicians have rejected it outright, expressing dismay that "clinicians are being told that what they have done for years is wrong" (id., p. 59). Other clinicians accept the treatments, describing them as rather close to their standard approaches to practice, but emphasize the importance of adapting parts of treatments selectively as necessary: "I think we are doing a lot of things that CPT would have us do ... we just don't have the proper name on it" (ibid.). Still others actively use the treatments, underscoring their effectiveness for certain patients but argue for flexibility in light of patient needs: "PE, of course, is not for everyone. I think it's a powerful therapy. And it's extremely effective for those veterans who are ready for it. Everybody's not ready." (ibid.)

Within the administrative and scholarly communities, views of the program are also mixed. The VHA program design excels along key determinants of implementation success identified in the literature (Karlin and Cross 2014; see Nilsen 2015). Yet many stakeholders have expressed surprise at the lower than expected rates of PE/CPT use. More importantly, stakeholders (e.g., providers, researchers, and VHA policymakers) appear to disagree about how to interpret these results and whether these rates indicate appropriate care, as captured in a recent *JAMA Psychiatry* exchange (Kudler, Day, and Schnurr 2016; Rothbaum 2016; Steenkamp 2016b, 2016a; Yehuda and Hoge 2016a, 2016b). These differing interpretations of program results also result in different policy recommendations for whether and how to address them.

In that exchange, researchers and health system administrators debate whether VHA providers and sites are using the EBTs appropriately. On the one hand, those use rates are interpreted as indication that providers appropriately deviate from an overly narrow standard of care in light of patient presenting conditions, preferences, values, or other valid constraints. For example, Steenkamp (2016b:431) argues that:

> over the past 10 years, evidence-based practice for military-related PTSD in the United States has often become equated with the use of 2 empirically supported treatments, namely cognitive processing therapy (CPT) and prolonged exposure (PE) therapy...

Instead of this de facto operating standard or definition of EBP based on the use of two specific EBTs, she argues that:

> *True evidence-based practice* involves integrating 3 sets of information to inform care: the best-available research evidence, clinical judgment, and patient preference. In true evidence-based practice, evidence is individualized to each patient in a personalized evidence approach. (ibid.; emphasis added).

She highlights the limits of the existing evidence supporting the two standard EBTs (see Steenkamp et al. 2015), acknowledging that they work for some patients but framing provider deviation as a desirable response to the "grey zones of clinical practice" in which scientific evidence is "conflicting, incomplete, or of unclear relevance" (id., p. 432).

On the other hand, deviation from PE/CPT is interpreted as an indicator of poor adherence to proven treatments, driven by a misunderstanding of the nuance and autonomy that the treatments provide and resulting in their incomplete implementation and uptake. Rothbaum (2016:756) argues that Steenkamp's (and others') accounts of the grey zones of clinical practice (writ large) "do not take into account the art and the science of evidence-based treatment." That is, for Rothbaum, EBP consists of preferentially applying specific, proven EBTs, which offer sufficient margin for discretion within the scope of the treatment. Rothbaum continues:

> The point behind using evidence-based medicine is not a cookie-cutter approach, but rather to conduct a careful assessment and *apply the intervention with the most evidence* to suggest it would work for this patient and, if evidence does not exist, to gather evidence on what is conducted to evaluate it objectively and disseminate the information gleaned. There is nothing that prohibits an individualized or a comprehensive approach (ibid.; emphasis added).

VHA administrators argue that the stakeholder perceptions (that the VHA policy is narrowly centered on the two treatments) inaccurately capture the VHA policy and emphasize the discretion that the policy as written accords providers. Kudler, Day and Schnurr (2016:756) note that:

> The VHA's intent is to ensure that veterans have the opportunity to learn about and access core EBPs for PTSD, depression, and serious mental illness. The handbook does not restrict clinicians to providing only these treatments.

They underscore that the policy ensures provider discretion in line with the "true Evidence-Based Practice" that Steenkamp advocated: "the VHA works to provide veterans the best care possible, incorporates patient preference, engages veterans in shared decision-making, builds strong therapeutic relationships, and encourages practitioners to exercise their best clinical judgment." (id., p. 757), as well as preferentially applying the two EBTs for PTSD in line with Rothbaum's view.

* * *

In the context of this debate about the appropriate levels of Evidence-Based Treatment use, stakeholders present differing views of what "true Evidence-Based Practice" and "the art and the science of evidence-based treatment" mean. Even among these experts in the field of Evidence-Based psychotherapy, discussing a carefully designed EBT implementation program, there are fundamentally different views of what it means to conduct Evidence-Based Practice (EBP), interpretations of the nuanced organizational policy and its effects on practice, and interpretations of evidence for specific Evidence-Based Treatments, even though all parties similarly advocate the importance of incorporating both

evidence and clinical judgment. This stakeholder debate—as well as additional commentary in the popular press (e.g., Morris 2015)—call into question what the organization's role should be in carrying out EBP, how individual clinicians should use EBP and specific EBTs, how to form, implement, and evaluate organizational policy and programs about EBP, and why stakeholder positions appear so intractable, despite their considerable common ground.

3. The varied meanings and uses of EBP

Each healthcare provider above relied on their medical school and/or residency training to provide a vision of what EBP means. They learned meanings and uses for EBP that varied considerably, and found that the view they learned did not fully prepare them for the realities of using EBP in practice. In some cases, they felt unprepared because they did not have the time or resources to conduct the deep literature searches that they wanted to for each patient; in others because they did not have the experience or reflex to review the literature at all, and when they did, they found that they were not satisfied with the evidence they encountered. As Dr. Andrews noted:

> I think when you're at med school, you don't really have the context, you just know that evidence is good. Because evidence leads to, supposedly better out comes, I think we learn maybe a little bit different here [in residency], that maybe [other approaches to decision making] can also be just as good.

While in theory, EBP is consistent with other clinical priorities and constraints, the ways that providers and organizations employ it in practice are at times inconsistent with those other clinical priorities.

Dr. Andrews, Dr. Bertrand and Dr. Carter also have different relationships with the research domain and individual research studies. Dr. Andrews was taught how to read and interpret the research literature but also to largely ignore it, as staying up to date on individual studies is overly time consuming and may be uncertain; rather she learned to engage with aggregate forms of evidence that are more stable and accessible. Dr. Bertrand was taught how to read and interact with the literature and values it, viewing the primary literature as preferable to the aggregate forms of evidence, especially when interacting with and persuading colleagues. Dr. Carter was taught not to read and interact with the literature, but rather to trust and apply the conclusions of expert-developed systematic evidence reviews and clinical practice guidelines that establish specific treatments as empirically proven.

EBP also affects these three providers' relationships with their colleagues and organizations differently. While Dr. Andrews consults evidence resources interactively alongside her preceptors to jointly determine a course of clinical action, Dr. Bertrand consults third party resources for his own edification and selects rigorous studies to support his claims when interacting with colleagues and superiors. Dr. Carter was taught a specific class of treatments in his psychology program that were considered evidence-based and was not expected to interact with the evidence in a deep way beyond those exceptional cases when he believed the first-line treatment would not be effective.

3.1. What is EBP?

So what is EBP to individuals in practice? These differences are particularly salient when considering how each of these providers would incorporate a new research study or other piece of evidence into their practice, whether and when they would become aware of it, and what their standards for changing clinical practice would be. While EBP was intended originally to "de-emphasize clinical intuition, unsystematic clinical experience, and pathophysiologic rationale as sufficient grounds for clinical decision making and stresses the examination of evidence from clinical research" (Evidence-Based

Medicine Working Group 1992:2420), these three examples underscore that EBP introduces as much uncertainty as it purports to relieve, even with extensive training in research evaluation and under considerable supervision. Uncertainty about EBP therefore has important implications for how healthcare providers act.

And what does EBP mean for organizations? EBP is at its core a theory for individual-level clinical decision making. And yet, as the experiences of Dr. Andrews, Dr. Bertrand, and Dr. Carter demonstrate, organizations play a principal role in disseminating resources, providing tools, training providers in specific EBTs, and facilitating EBP writ large. The VHA case demonstrates that, even with the most sophisticated expertise in clinical research and implementation science accompanied by significant resources, implementing EBP as an organizational initiative is complex, confounding, and at times contradictory. The VHA developed a number of resources, policies, and programs to promote EBP for PTSD, including training in two specific treatments, development of clinical practice guidelines, and a policy to encourage—but not require—those two EBTs. Provider, administrator, and researcher stakeholders all agree that providers should have the autonomy to use discretion in deciding how and when to apply EBP, and these specific treatments, which the policies provide. But the policy as it is written (Department of Veterans Affairs 2012), encouraging use of the specific treatments when clinically indicated, is open to interpretation based on different individual views of EBP and therefore difficult to evaluate. Consequently, they interpret the use of that discretion in different ways—either as appropriate adaptation in light of local complexity or as non-compliance to the evidence-based standard—and consequently recommend very different organizational action. Uncertainty about EBP therefore has important implications for how healthcare organizations act.

4. Dissertation Outline

In this dissertation, I identify what the concept of Evidence-Based Practice means to health system stakeholders, how providers and organizations use EBP to clinical ends in practice, and how this variation in meaning affects the social and professional relationships healthcare providers have with their colleagues, organizations, and profession, including EBP initiative outcomes, stakeholder satisfaction, and professional identity. Through interviews with stakeholders with clinical, administrative, and research backgrounds across a wide range of experience, I document variation in how EBP is understood and used in practice. I identify a gap between the nuanced EBP models in theory that have been built up over decades of research and the tacit understanding most users have in practice; further I demonstrate how these incomplete mental models of EBP affect the processes and decisions that constitute EBP in practice. I introduce the organizational role in EBP and explore how organizations' motivations in implementing EBP interventions relate to the activities they select and implementation programs design. Finally, I demonstrate how providers use EBP in their interactions with colleagues and organizations, showing that these social uses both instill for providers the meaning and significance of EBP while at the same time affecting the very meanings and the processes that ultimately the provider uses under EBP.

4.1. Introductory Material – The Evidence-Based Practice Model in Context

Chapter 2 provides a history and literature review of the model of Evidence-Based Practice and its implementation in organizations. It also addresses healthcare providers' professional autonomy and identity as they pertain to the use of EBP. EBP is at its core a clinical decision-making model for individual practice; I describe how its definition evolved over sustained academic criticism to counterbalance adherence to external evidence with more weight on clinical expertise. With respect to organizational

interventions, I also describe the implementation science literature and the gap in research on how interventions are selected and designed prior to implementation.

Chapter 3 describes the empirical methods used in this study. This study is based on interviews with a total of 53 respondents about their experiences with EBP in 15 healthcare organizations, including physicians, psychologists, psychiatrists, a nurse practitioner, organization administrators, and quality improvement specialists. I used a grounded theory approach to inductively build theory on individual and organizational uses of EBP and later reconcile these inductive concepts and relationships with existing theory to improve generalizability.

4.2. Empirical Analyses

In Chapter 4, "EBP at the Individual Level: Implicit Models of EBP and Implications for Clinical Practice," I explore the clinical meanings and uses of EBP at the individual level, that is, this chapter is an analysis of EBP within its intended scope as an individual clinical decision-making model. I demonstrate that stakeholders vary in how they operationalize the concept of EBP in practice and categorize the range of what I call *implicit mental models of EBP* that exist at the individual level and their effects on clinical decisions. I find that respondents' implicit mental models of EBP each emphasize an incomplete aspect of the full EBP model over other aspects of EBP decision-making: *Resource-Based EBP* emphasizes specific evidence artifacts, the decision-making inputs; *Decision-Making EBP* emphasizes the decision-making process; and *EBT-Based EBP* emphasizes specific Evidence-Based Treatments, the decision-making outputs. As the full model of EBP relies on the balance among all of these components, I find deviations from expected uses of EBP based on the narrower implicit mental models.

In Chapter 5, "EBP Activities at the Organization Level: Standardization and Discretion," I show how EBP is used to clinical ends by healthcare organizations, analyzing why and how organizations act on EBP. I show that health care organizations use a range of different *EBP activities and interventions* when designing and implementing EBP-related programs. I identify the different motivations organization administrators have in designing EBP interventions, including both supporting individual EBP and achieving broader organizational ends, and how these motivations affect understandings of the balance between standardization and discretion.

In Chapter 6, "EBP in Context: Professional Standing, Autonomy, and Identity," I analyze how the meaning of EBP is constructed through interactions among stakeholders within organizations and in the professional environment, identifying the broader social and professional meanings beyond its clinical use that emerge in context. I identify social phenomena that arise in the use of EBP in practice that have not been addressed in theory, related to stakeholder *standing to evaluate evidence*, provider *autonomy* in treatment choice, and provider *identity*. I find that in certain conditions, providers *renounce standing* to evaluate evidence, make *demonstrative uses* of EBP, and *administrators claim standing* to evaluate evidence. Stakeholders variably define clinical discretion as internal or external to EBP, affecting how they design and react to organizational EBP interventions. I argue that these social phenomena mediate outcomes of EBP implementation programs. Adopting frameworks from the policy implementation literature, I show how EBP implementation can chart a way forward by integrating provider autonomy into EBP implementation program design and evaluation.

4.3. Conclusions

In Chapter 7, "Summary and Contributions to Scholarship on EBP," I discuss the relationships among the individual clinical uses of EBP, organizational uses, and the social uses of EBP. This thesis describes a persistent dialectic between the clinical uses of EBP by individuals and organizations and the social and inter-professional relationships among individuals, collegial groups, and organizations. The

organizational context inextricably affects the meaning and use of EBP in practice; organizational and professional needs, identity, and control mechanisms shape how individuals and organizations use EBP; these EBP uses in turn shape the organization's relations with clinicians, whose own desires for professional standing and identity in turn affect how they use EBP. I conclude by addressing the overall contributions to the EBP literature, practical applications, limitations and future work.

Chapter 2 - Literature Review

Since its introduction in 1992, Evidence-Based Practice (EBP) has become a core component of healthcare education and practice. This chapter presents the history and development of the concept, including: its initial context, motivation of its developers, and definition; the criticism and refinement of the model over the following decades, and the theory-practice gap that has arisen as it is used in practice, which motivates the present study. I then describe the uses of EBP at the organization level as a quality improvement lever, including the development of the implementation science field and models that support organizational EBP interventions. Finally, I address the state of the literature on the social and professional implications of EBP to situate EBP in terms of the broader professional roles and relationships it affects. These three sections correspond to the three empirical chapters, Chapters 4-6, that follow.

1. <u>Development of Evidence-Based Practice as an individual clinical practice model</u>

EBP was developed in 1992 as an individual clinical decision-making model. Since then, EBP has become a core aspect of medical education and clinical practice, despite considerable criticism. Paradoxically, it has become a touchstone for healthcare stakeholders' beliefs about standardization and provider discretion in clinical practice, despite both EBP proponents' and critics' acknowledgement that both are necessary, and the emphasis on clinician discretion in the model of EBP in theory. While EBP has been engrained in medical education and implemented by healthcare organizations, there is wide variation in how it is used and measured in practice; disagreement about EBP appears to result at least in part due to disagreement over the resources, tools, and measures used as a proxy for the broader concept in practical applications. This section describes the concept of EBP as initially designed, the history of EBP criticism and consequent revision of the model, and the variation in how EBP is used in practice.

1.1. What is Evidence-Based Practice?

At its core, EBP is intended as a clinical decision-making approach for individual providers. The Evidence-Based Medicine Working Group announced the Evidence-Based Medicine (EBM) model as a "new paradigm" of clinical decision-making in 1992 that "de-emphasizes intuition, unsystematic clinical experience, and pathophysiologic rationale as sufficient grounds for clinical decision making and stresses the examination of evidence from clinical research" (Evidence-Based Medicine Working Group 1992:2420). A clinical decision-making model to substantiate the initial presentation was promulgated within three years, providing a four-step algorithm prescribed to constitute EBP. Under this model, the steps of EBP decision-making are: framing the clinical question, finding relevant evidence, appraising the evidence for its clinical relevance, and acting on the evidence (Rosenberg and Donald 1995).

EBP was not new at its time; it shares roots with the research utilization literature (Stetler 2001; Stetler and Marram 1976), as well as Cochrane's efforts to empirically identify, test, and disseminate efficacious clinical procedures (Cochrane 1972; Hill 2000). The EBP concept emerged following developments in the clinical epidemiology field during the 1980s, as scholars in that area sought to meet the production of clinically relevant population-level findings with training for physicians in how to read and interpret those resources (Heller and Page 2002; Sackett 2002; Sackett et al. 1991). Further, as Eddy (2005) argued, a clinical practice guideline development movement began in the 1980s, and developed

parallel to the EBP movement[2]. While providers would often implicitly use guidelines when conducting EBP, Eddy argues that guidelines were only integrated into the Evidence-Based Medicine models in the 2000s, in response to criticism such as his own that it was impractical and error-prone for individual providers to attempt to conduct comprehensive literature searches for each patient (e.g., Guyatt et al. 2000). Eddy argued for a "unified model" of EBP that combines the individual evidence review and decision-making model of EBP with a guideline-based approach that incorporates collective evidence review and standardized recommendations. These collectively developed recommendations are now commonly used as part of EBP either instead of or in addition to individual review of the primary research literature (Neumann et al. 2015).

1.2. Early criticism and refinement of an EBP model of practice

Immediately controversial, EBP was challenged on epistemological, practical and provider identity grounds. As early as 1995, critics identified both fundamental concerns and logistical challenges of implementing such a model in actual practice. From an epistemological standpoint, critics argued that EBP represented an overly narrow approach to defining and disseminating evidence, by overemphasizing empirical evidence and certain research methods (e.g., Randomized Controlled Trials) relative to other valid sources of information for clinical decision-making (e.g., Grahame-Smith 1995; Tonelli 1998, 2006). From a practical standpoint, critics raised the concern that the clinical question framing and literature review process that EBP proposed for each patient would be too demanding on providers and unnecessary in most cases, despite the EBM Working Group's assertion that this process was manageable (Grahame-Smith 1995). Finally, in terms of provider identity and autonomy, critics were concerned that EBP was an elite power play by clinical researchers that compromised the autonomy of individual providers (The Lancet (ed.) 1995). They also expressed concern that payers would use EBP as a means to bound clinician decision-making around the most cost-effective treatments (Grahame-Smith 1995; Tanenbaum 2005; The Lancet (ed.) 1995).

EBM Working Group members formally responded to these criticisms. They argued that EBM was intended as an individual-level decision-making process, and that system-level use of EBP to cut costs would be a "misuse" of the model. They also positioned EBP as a complement—and not a replacement—to traditional medicine and clinical decision making (Haynes, Devereaux, and Guyatt 2002a; Sackett et al. 1996). Straus & McAlister (2000) organized many of the early criticisms of EBM into three categories: (1) limitations to the practice of medicine universally, (2) specific limitations of EBM that the authors acknowledge (e.g., the lack of empirical evidence that EBM leads to better outcomes), and (3) what they call "misperceptions" of EBM (e.g., that it represents an overly algorithmic "cookbook" approach to medicine).

However, Cohen, Stavri & Hersh (2004) challenged Straus and McAlister's typology of EBP criticisms, arguing that they overly downplayed valid concerns about EBP. Most notably, Cohen and colleagues challenged Straus and McAlister's assertion that the early critiques represent "misperceptions," noting that the criticisms were of high scholarly quality. As Cohen and colleagues argued (p.36):

> The Straus and McAlister paper placed as many issues into the "misperceptions of EBM" category as into the "limitations" categories, the implication being that an overwhelming number of the EBM critics simply do not understand EBM. Given that the pros and cons of EBM have been debated for over a decade, it is unlikely that the EBM critics have basic misunderstandings of the

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[2] As an early proponent of the clinical practice guideline movement, Eddy also claimed to have been the first to publish the term, "evidence-based," referring to the development of guidelines.

fundamental principles of EBM. It is more likely that Straus and McAlister's choice of categories shows a strong pro-EBM bias and fails to elucidate the true nature of the issues.

They instead proposed the following typology of EBP criticisms, adapting the three categories proposed by Straus and McAlister:

- **challenges to the philosophical grounds for EBP**, e.g., an overemphasis on experimental methods intended for empirical observation over physiological theory as a basis for clinical decisions.

- **arguments that the definition of evidence is overly narrow and clinicians should have access to a wider range of information**, e.g., rigid adherence to a hierarchy of evidence emphasizing RCTs.

- **the lack of empirical support for EBP**, i.e., that "it does not meet its own empirical tests for efficacy" (Cohen et al. 2004:37)

- **concerns about applying population-based evidence to individual patients**

- and **the threat to doctor/patient autonomy.**

These competing typologies suggest a fundamental divide in understandings of the paradigm and ambiguity in the concept of EBP. The argument over what constitutes a "misperception" versus a legitimate critique demonstrates the normative differences underlying the debate. Similarly, Greenhalgh and Donald (2003) argued that the definition of EBP originally proposed by the EBM Working Group was overly rhetorical and vague, designed to be unobjectionable. They proposed a narrower, more rhetorically neutral operational definition for EBP as "the use of mathematical estimates of the chance of benefit and the risk of harm, derived from high-quality research on population samples, to inform clinical decision-making" (Greenhalgh 2011:94). This definition was intended to make clear the normative position and specific practices underlying EBP, such that stakeholders could object to and debate its validity and desirability as a basis for clinical decision-making.

By the late 1990s, EBP scholars began to refine the conceptual model of EBM in light of these challenges. The model development effort included a group of EBM Working Group members, who further adapted the original decision-making model to account for the idiosyncratic realities of the clinical setting that preclude a strict evidence-based approach. The refined models increasingly focus on clinician decision-making as an overarching, central broker of the often disparate inputs, incorporating clinician experience, evidence, and patient values in a "three-circle" Venn diagram (Haynes and Haines 1998), and eventually to explicitly placing clinician decision-making at the center of the model (Haynes et al. 2002a).
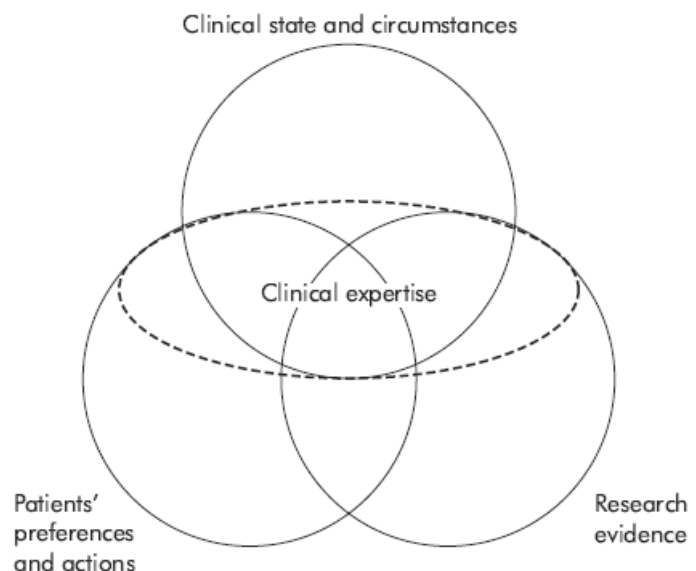

Figure 2.1. The refined "three-circle model" of EBP, with clinical expertise at the center (from Haynes et al., 2002a).

Much of the debate surrounding EBP is centered on these general definitions and broad prescriptive frameworks. The developers of EBP compiled a set of *Users Guides to the Medical Literature,* which more clearly states the processes

prescribed under EBP (Guyatt et al. 2002). The *Users Guides* primarily describe how to evaluate the quality of research evidence (e.g., based on research methods used), but provide less guidance on how to incorporate those findings into clinical decisions.

Around the same time, related conceptual models of EBP were developed in different areas of healthcare, including mental health, nursing, and public health (Satterfield et al. 2009). These applications all similarly frame EBP as a three circle model of evidence, clinical state and patient value inputs governed by clinician decision-making and experience within an organizational (and societal/political) context, similar to the Haynes et al. model presented in Figure 2.1 (DiCenso, Cullum, and Ciliska 1998; Fineout-Overholt, Melnyk, and Schultz 2005; Regehr, Stern, and Shlonsky 2007; Rosswurm and Larrabee 1999; Satterfield et al. 2009; Stetler 2001; Titler et al. 2001). These models similarly underscored the importance of clinical discretion and adaptation to respond to the challenges to the initial EBM framework. In social work in particular, McNeill (2006) presented a relativist model of EBP that emphasizes the provider's interpretation and adaptation of evidence in light of the perspective-taking and context-dependence that characterize social work.

Despite these arguments by EBP proponents that clinical practice under EBP should be individualized, critics fear that EBP will lead to "cookbook" or "cookie-cutter" medical practice (e.g., Clinicians for the Restoration of Autonomous Practice (CRAP) Writing Group 2002). The "cookbook medicine" critique underscores the tension between the population measures used to establish standardized evidence and implement organizational policies on the one hand and the clinician's individual responsibility to the patient on the other (Haynes et al. 2002a).

Proponents also have argued that EBP is consistent with other paradigms of clinical care that focus on individualized patient care (Grol 2001a), including experience-based practice (Glasby and Beresford 2006), values-based practice (Petrova, Dale, and Fulford 2006), shared decision-making (Hoffmann, Montori, and Del Mar 2014), and patient-centered care (Hasnain-Wynia 2006). Each of these arguments have emphasized how evidence could be used by providers to identify treatment options and frame informed decisions for the patient, that EBP complements or supports the more individualized or patient-centric paradigms. Despite proponents' arguments that reconcile EBP with other, more individualized paradigms of clinical care, it is unclear how these frameworks are actually perceived and used, and thus how they align in practice. Some scholars have suggested that EBP is used in practice in ways that preclude more individualized care, and that individual providers often do not learn how to reconcile these normative frameworks of clinical practice (e.g., Greenhalgh 2011).

However, EBP proponents and critics often have more in common than it may seem. Both proponents and critics of EBP advocate considerable provider discretion and agree that in many cases, the available evidence may be incomplete, contradictory or inapplicable to the practice setting for an individual patient's case (Naylor 1995). Indeed, the developers of EBP encouraged clinicians to "pay due respect—no more, no less—to current best evidence in making decisions" (Haynes, Devereaux, and Guyatt 2002b:1350). And as Dopson and colleagues (2003) noted, EBP critics have come to express empirical limitations of a particular treatment in their area, in effect taking on the language and lessons of EBP to criticize a particular instance of it.

So why does the claim that criticism of EBM reflects "misperceptions" persist as much as two decades later (e.g., Chorpita et al. 2007; DiCenso et al. 1998; Schaeffer and McMurtry 2004; Straus et al. 2007)? I argue that while theoretical EBP models encourage both consideration of external evidence and provider discretion in general, they provide limited guidance in detail on how to strike the balance in practice between adherence to the recommendations of the scientific community and the relevance of local patient conditions and preferences for clinical decisions. As a result, stakeholders differ in how they interpret this balance prescribed under EBP, leading to frequent debate and difficulty applying EBP in

practice. Stakeholders share considerable common ground on the broad underlying principles of EBP, i.e., that professional providers should both maintain currency in practice standards and tailor practice for their individual patients. However, the use of the term EBP, especially in light of the varied interpretations of the details of the EBP model and its varied use in practice, impedes reconciliation of these positions. These competing interpretations and typologies would continue through the next two decades, even as EBP expanded its reach into organizational initiatives and policy.

2. A theory-practice gap in EBP use

While the criticisms of EBP led to expansion of the model in theory to emphasize clinical discretion, empirical research has identified significant variation in how stakeholders understand and use EBP in practice. Existing empirical research on EBP focuses primarily on 1) provider competence in necessary skills, 2) the rates of compliance with evidence-based treatments or guidelines for a particular clinical condition, and 3) provider sentiment about EBP or specific evidence-based treatments or guidelines.

Provider competence in skills deemed necessary to conduct EBP, particularly clinical research literacy, is a common focus of empirical research on EBP, and studies often find lower than expected competence in those underlying skills (e.g., Melnyk et al. 2004; Oliveri, Gluud, and Wille-Jørgensen 2004; Zwolsman et al. 2012). For example, a survey of registered nurses from the American Academy of Nursing showed that only half were familiar with the term EBP, more than half did not believe their colleagues use research evidence in practice, and most were not familiar with research review processes and electronic databases (Pravikoff, Tanner, and Pierce 2005). While significant attention has been paid to EBP in medical school and residency programs, skills and provider support for the use of EBP remain low, especially if not fully integrated into clinical practice (Coomarasamy and Khan 2004). However, medical schools and residency programs are an important part of professional identity formation (Pratt, Rockmann, and Kaufmann 2006), so the focus on EBP in these programs embeds EBP into young providers' understanding of what it means to be a clinician. These studies measure *necessary conditions* for EBP decision-making, i.e., the extent to which providers are prepared to make decisions that appropriate consider the evidence.

Another significant area of empirical EBP research observes the *rates of compliance* with treatments or resources identified by scholars as evidence-based. The first empirical study of EBP indeed took this form, finding a high rate of use of the predetermined evidence-based treatment (Sackett et al. 1995), though this finding was controversial at the time (White et al. 1995). More recently, this type of study has been used to show effects of EBP implementation programs, where uptake of the treatment is an indicator of both implementation outcomes and provider use of EBP (e.g., Shiner et al. 2013). These studies measure the *outputs* of EBP decisions, i.e., the extent to which provider decisions lead to the use of empirically supported treatments in appropriate situations.

Empirical research also typically addresses provider sentiment about the concept of EBP writ large or specific EBP resources. Survey-based measures has been developed for provider attitudes to EBP or specific Evidence-Based Treatments (EBTs) (Aarons 2004; Melnyk, Fineout-Overholt, and Mays 2008; Reding et al. 2014). Researchers have also studied provider sentiment about specific EBP resources as part of evaluations of healthcare organizations' EBP implementation interventions via interview. These studies focus on provider sentiment about the specific EBP resources, such as a guideline or specific EBT, that the organization implemented to its providers (e.g., Cook et al. 2013; Flores et al. 2000; Waller et al. 2013). These studies typically report mixed sentiment about EBP writ large or specific EBP resources, in which providers hesitantly welcome EBP but are skeptical about its effects on their clinical autonomy (e.g., Tracy, Dantas, and Upshur 2003).

Greenhalgh, Howick and Maskrey (2014) describe a gap between theory and practice in EBP use on the population level, identifying stakeholder group interests and logistical challenges that lead to misapplication of EBP, threatening the benefits to be derived from EBP. The challenges they identify include the "distortion of the brand" (p. 1) by vested interests, unmanageable volume of guidelines and evidence materials, marginal clinical significance from statistically significant findings, inflexible organizational application of EBP, and poor applicability of EBP to multimorbid patients. They argue against strict adherence to guidelines, and a reorientation of clinician training in EBP away from critical appraisal of literature and toward judgment and shared decision-making, i.e., toward more detailed training in how to *apply* evidence rather than solely how to *evaluate* it.

Differences in the meaning of EBP also appear to have emerged across specialties. Many of the professional societies have similar statements defining EBP that align closely with the Sackett et al. (1996) definition presented above, incorporating the best available evidence alongside clinician discretion (APA Presidential Task Force on Evidence-Based Practice 2006). However, the resources they provide to support the training and use of EBP in practice differ in terms of the approach to evidence use that they imply. For example, the American Psychological Association recommends that providers be aware of the evidence base for the specific, most common psychotherapies (American Psychological Association 2014). The American Academy of Family Physicians (2015, 2019) residency curriculum recommendations do not provide resources for EBP but rather for Scholarly Activity and Information Mastery, an approach to finding, evaluating, and applying clinical evidence.

These empirical results suggest a gap between EBP in theory and in practice. The early criticism of the EBP model suggests that the validity of EBP as a model of clinical practice depends on the delicate balance between external standards and individual discretion achieved through the model's revision. However, the empirical observations identified here suggest that providers and organizations do not have this nuanced understanding of EBP. Limited provider skills in EBP may indicate that providers do not believe these skills are necessary to conduct EBP. Rates of compliance with the treatments or resources deemed "evidence-based" may not capture informed deviation from those treatments that fall under the individualized application of evidence in the theoretical model. Finally, survey-based studies of provider sentiment about EBP writ large may not capture the variation in providers' understanding of EBP that could affect their sentiment. Interview-based studies of provider sentiment about organizational implementation of specific EBP resources are often focused primarily on the intervention itself, rather than providers' views about EBP writ large. These challenges may impede practitioners' ability to effectively integrate EBP into care.

This ambiguity in providers' understanding of the EBP concept also may threaten measurement validity in empirical EBP research. Although providers may demonstrate literature review skills or familiarity with specific EBTs, for example, it is unclear how they apply them in practice. When providers choose not to use specific EBTs with individual patients, it is unclear whether they are making an informed "evidence-based" decision in light of the patient's unique characteristics or preferences, or whether they are improperly applying (or rejecting) the EBP decision-making model. Similarly, when providers express dissatisfaction with an organizational EBP intervention, it is unclear whether they are reacting to the idea of applying EBP as a clinical model (whatever their understanding of the concept), to the specific treatments and resources being implemented, or to the organization's intervention design (i.e., the incentives, policies and inter-professional relationships implied by the intervention).

This dissertation addresses this gap in qualitative understanding about providers' views of EBP to identify how providers understand the concept in practice and how that understanding affects their use of evidence resources in clinical decision-making.

3. <u>EBP use at the organization level</u>

This dissertation also addresses the use of EBP at the organization level. While EBP is clearly defined in theory as an individual clinical decision-making model, it is less clear how and why organizations apply EBP. Health care administrators have increasingly turned to EBP as a key lever for improving care quality. However, the organizational setting complicates EBP by adding additional uses, interests, and stakeholders to what was initially an individual-level clinical decision-making model.

Just as debate persists on how to design the EBP model at the individual level to balance adherence to standards and individual discretion, organizational use of EBP presents further challenges. First, organizational EBP use introduces the question of what the organization hopes to achieve through the use of EBP. This dissertation describes the mechanisms by which administrators seek to attain quality improvement via EBP. Second, organizational use of EBP introduces the question of how EBP programs are designed. This thesis complements the implementation science literature by identifying how organization administrators design EBP implementation interventions to achieve quality improvement goals. Finally, the organizational role introduces other stakeholders into what is otherwise an individual-level clinical decision-making model. Scholars have identified organizational leadership as an EBP facilitator, but this thesis describes how different organizational stakeholders view their roles in carrying out EBP interventions.

3.1. EBP as a healthcare organization quality improvement lever

EBP contributes to the effort to reduce the "quality chasm" between care according to the best currently available scientific knowledge and everyday practice (Institute of Medicine 2001, 2008). Health systems have increasingly relied on EBP for healthcare quality improvement and to improve the translation of research evidence into clinical practice. EBP is one of a number of intervention paradigms that gained attention in the 1990s for their role in organizational quality improvement (Grol 2001a).

Nevertheless, the EBP paradigm fits into a broader debate as to how organizations balance fidelity to standardized practice and individual judgment. Goldman and colleagues (2001) place EBP in a "triangle relationship" with quality improvement and accountability. To them, measures of fidelity, the extent to which clinicians apply specific Evidence-Based Treatments accurately, are essential to ensure compliance to specific Evidence-Based Treatments, but "like other process measures, are a means to an end, not an end in themselves. It is critical that fidelity to a particular model or practice not be regulated in a way that prevents client choice, clinical judgment or continuing change as new evidence emerges" (Goldman et al. 2001:1592). This dissertation extends this line of research to describe how organization administrators view EBP interventions in practice, i.e., how they frame EBP, fidelity, and accountability, including the measures they use and extent to which they regulate provider behavior around the models or practices they disseminate.

At the organization level, different professionals with different standards interpret and use quality improvement in different ways. Different healthcare professional groups have different processes for determining what constitutes good or quality practice and have varying views about guidelines and practice standardization (Davies, Powell, and Rushmer 2007).

This dissertation extends this line of research on QI initiatives into EBP to understand how EBP is applied across professions and why controversy around EBP persists.

3.2. Implementation Science and organizational EBP implementation

EBP at the organization level draws on an implementation science literature that developed at the same time as the EBP literature with a similar goal of reducing the theory-practice gap in clinical practice (Lomas 1993). Implementation science research arose out of observed heterogeneity in both the strategies organizations use to implement programs (Grol and Grimshaw 1999; Proctor et al. 2009) and their outcomes, i.e., the observation that implementation of EBP tools such as clinical practice guidelines, even with organizational and end-user support, often did not lead to adherence (Grimshaw et al. 1995).

Implementation models emerged from the broader literature on passive knowledge utilization and innovation diffusion, that is, how providers learn about and take up innovations in the absence of targeted interventions (Berwick 2003; Green et al. 2009; Greenhalgh et al. 2004; Lomas 1993; Rogers 1995). These early models were adapted to support and evaluate active organizational implementation programs, particularly regarding EBP, to identify the processes, barriers and facilitators of implementation, including characteristics of the individual, organization, and innovation that affect implementation (Ferlie and Shortell 2001; Grimshaw and Eccles 2004; Grol et al. 2007). The dissemination and implementation literature now includes prescriptive *process models* that guide organizational implementation of healthcare innovations; descriptive *determinant frameworks or theories* that identify factors affecting implementation outcomes, and descriptive *evaluation frameworks* used to assess implementation outcomes (Nilsen 2015).

The Consolidated Framework for Implementation (CFIR) integrates many of the existing implementation models to guide theory development and program implementation in practice (Damschroder et al. 2009). The CFIR organizes implementation barriers and facilitators by the domain in which they operate: characteristics of the intervention itself, the inner (organizational) setting, the outer (professional and policy) setting, individual providers, and the implementation process. The CFIR has contributed to the standardization of constructs in implementation research, facilitating theory building. It has been used primarily to identify barriers and facilitators to implementation during or after the intervention, more so than to inform intervention design of actual programs *ex ante* (Kirk et al. 2015). However Williams and Beidas (2018) argue that implementation research should incorporate more general social science theory around individual motivation and learning, rather than a "disaggregation" approach that includes a large number of barriers and facilitators without a strong basis in social science theory. But the focus on implementation underscores the gap in understanding about EBP initiative formation. The CFIR model has been successful in identifying factors that affect implementation outcomes, however the model still does not incorporate factors regarding the choice of implementation object and the program design. Importantly, this model still positions implementation of the EBP innovation as the end and the barriers and facilitators as the means of the implementation model. Little is known about how EBP innovations are selected and implementation programs designed, and how organization administrators want them to be used, i.e., the ends that the EBP innovation are intended to achieve and how.

Aarons and colleagues (2011) proposed a conceptual model of Exploration, Preparation, Implementation and Sustainment of EBP innovations (the EPIS model). The EPIS model extends the CFIR by positioning CFIR domains and implementation barriers and facilitators according to the program phase during which they operate. However, relatively little research to date has described the exploration stage to identify how and why organization administrators select specific EBP innovations to implement (Moullin et al. 2019). Those studies that have addressed the exploration and preparation phases target administrators' attitudes about specific EBTs for mental health, rather than their views about how and why to implement EBP writ large as an organizational initiative.

This dissertation focuses in particular on the process of EBP program design, identifying how and why administrators design EBP interventions, i.e., the ends that EBP implementation is intended to achieve. This study therefore contributes to clarifying how administrators and providers understand innovation/system fit, a key construct in the EPIS framework that does not yet have an associated measure, responding to the authors' call for more precise operationalization of EPIS factors.

3.3. Implementation outcomes

The EBP decision-making model (Haynes et al. 2002a), many organizational EBP policies (e.g., Department of Veterans Affairs 2012), and frequent academic and practitioner commentary (e.g., Rothbaum 2016; Steenkamp 2016b) all consider clinical discretion to be a key element of EBP. Providers are expected to follow the recommended course of action in 'appropriate' cases and to deviate from evidence-based recommendations when patient characteristics, values, or particular system characteristics merit another approach. Little is known about how and why organization administrators use EBP, how they set standards for 'appropriate' EBP use in their organization, and how they expect providers to balance use of the EBP innovation and clinical discretion, two conflicting aspects of decision-making that ultimately affect measurements of implementation and therefore the interpretation of program outcomes.

Existing implementation models often specify "successful implementation" as an outcome variable (e.g., Damschroder et al. 2009:5; Kitson, Harvey, and McCormack 1998:149) but do not address how success is measured and interpreted by local stakeholders. Proctor and colleagues (2011) proposed a taxonomy of implementation outcome metrics to align future research in terms of common outcomes along which 'successful implementation' is evaluated. The outcomes that Proctor and colleagues propose are: acceptability, adoption, appropriateness, feasibility, fidelity, implementation cost, penetration, and sustainability. However, while these metrics provide clarity on *which* outcomes matter to stakeholders, scholars have not yet examined how stakeholders determine the targets along those metrics that constitute appropriate EBP use. This dissertation complements existing implementation models by observing how practitioners express desired conditions for use of the implemented innovation.

This gap in how scholars understand appropriate implementation of EBP is significant because stakeholders of some EBP programs appear to fundamentally disagree in their assessment of the program, including whether the program is successful and, consequently, how the organization should proceed, as evidenced by the scholarly debate over the VHA case described in Chapter 1. Certain outcomes in the Proctor et al. taxonomy are unobjectionable, for example, minimizing implementation cost is an unambiguous goal. However, stakeholders may have different views on outcomes such as appropriateness of the innovation for the site, adoption and fidelity, as the debates about fidelity described above make clear.

While generally accepted cases of implementation 'successes and failures' (Grol 2001b) have advanced the literature on implementation barriers and facilitators, relatively little is known about cases such as the VHA example in which stakeholder evaluation of the program is ambiguous or conflictual.

This dissertation extends the implementation science literature to describe not only which outcomes matter to organizational stakeholders but also how they differ in their evaluations of what constitutes appropriate use along those metrics.

3.4. EBP leadership as an organizational enabler

There is a growing literature on organization leadership as an enabler of EBP. In particular, implementation researchers have increasingly focused on transformational leadership, i.e., the ability of

leaders to empower individual providers and develop individualized ways of developing and applying EBP-related skills (e.g., learning specific EBTs), decreasing the perceived burden of EBP and improving its use (Aarons 2006; Brimhall et al. 2016) . This shift to more individualistic approaches to EBP implementation is in line with the original definition of EBP theory, and describes one role that organization administrators play in conducting EBP as an organizational initiative, i.e., facilitating individual providers' conduct of EBP.

While the EBP leadership literature is intended primarily to identify ways in which organizational leaders can facilitate EBP implementation, it also underscores the differences among organization stakeholders' roles and priorities. For example, a multi-stakeholder analysis of a mental health EBP implementation program demonstrated significant variations in stakeholder priorities regarding EBP use, noting that only administrators and treatment developers identified therapist-level barriers to implementation. This suggests that administrators and treatment developers have different goals and perspectives from therapists on how and why the treatments should be used (Beidas et al. 2016).

Similarly, Kyratsis and colleagues (2014; 2012) describe how individual providers and organization administrators conceive of, seek, and use evidence in practice, including the ongoing sense-making providers conduct to stay up to date, how they deal with missing research evidence, and how they interpret and use evidence for themselves and others. They show that various groups use different sources of evidence to find information and make decisions, finding that doctors rely heavily on colleagues and peer reviewed journals.

This dissertation extends this line of research to assess how stakeholders' views of the concept of EBP affects these uses of evidence, in order to identify the underlying causes of these varying uses in practice.

4. EBP as a social and professional phenomenon

EBP as a decision-making model affects providers' professional status and autonomy to make clinical decisions, afforded by their specialized knowledge and accorded by professional societies (Abbott 1988; Freidson 1988). Scholars of EBP have evaluated this relationship, alternately finding that EBP supports or constrains providers' professional discretion and identity, and considering the effects of professionalism on implementation initiatives (Timmermans and Mauck 2005). EBP is also understood as a social phenomenon on profession and clinic levels, in terms of the movements that arise for and against it (e.g., Pope 2003), and the ways collective groups understand and use EBP and specific EBP resources such as guidelines. These social factors affect the role that EBP plays for individuals and organizations, which is taken as axiomatic in EBP implementation models because they do not address the normative questions of EBP program formation.

4.1. Social construction of EBP

Evidence and its use in healthcare have long been recognized as a socially constructed phenomenon. On the population level, variations across clinical practice guidelines even with the same evidence indicate the significant differences in what is considered appropriate or desirable practice within a particular health system or patient population and the degree of interpretation necessary to translate research evidence into clinical recommendations (Fahey and Peters 1996; Grol 2001a). Dopson and colleagues (2002) argue that despite frequent appeals to the general concept of "the evidence," what constitutes evidence is socially constructed, and the availability and interpretations of evidence differ individually, by stakeholder group, and by profession.

It is still unclear how provider groups make sense of, communicate, and make decisions on evidence. Enkin & Jadad (1998) argue that anecdotes can be used to communicate evidence, but that they

are not sufficient as evidence themselves. However, this distinction is often not so clear and does not fit how providers actually use information in practice; multiple studies have shown that providers rely on the process of communicating anecdotes and tacit knowledge with peers to make sense of evidence. As they do so, these anecdotes and interactions often become inextricable from the evidence. Providers frequently list their peers as one of their top sources of evidence in practice (Kyratsis et al. 2014). Even when equipped with formal guidelines, or other EBP innovations, providers tend not to use them as expected, and groups of providers collectively construct "mindlines," collective, tacit understandings of guidelines for a particular clinical condition, rather than consult and adhere closely to formal clinical practice guidelines (Gabbay and le May 2004). Wieringa and Greenhalgh (2015) review the development of the mindlines concept and note that while some EBP proponents find this use of evidence inaccurate and hazardous, others have called for a deeper understanding of use of EBP in practice beyond the rationalist assumptions that underlie some application of EBP and empirical measurement of EBP use.

The social construction of evidence and guidelines calls into question how organizations plan and set goals for EBP initiative implementation, and the extent to which organizations actually think about use of innovations in the terms that are measured in EBP and implementation studies (e.g., the Exploration, Planning, Implementation, and Sustainment of the EPIS model). What is framed as a barrier and facilitator to the goal of innovation implementation may indicate that administrators have different goals for EBP programs in practice than as modeled in implementation frameworks.

Dopson and colleagues argued that while proponents expected that EBP would be implemented linearly and rationally, empirical studies showed that EBP implementation was far more complex and socially driven. As the authors noted: "[EBP] advocates have sometimes been surprised at the degree of resistance to something which seems to them both self-evidently good and worthwhile, and also entirely consistent with the 'scientific' biomedical paradigm within which they operate" (Dopson et al. 2003:317). They argue that EBM failed to account for the complex nature of the implementation gap. Rather than a technical question of making self-evident clinical evidence available to providers, there were also broader organizational and behavioral challenges in getting practitioners to think in "evidence based ways" (ibid.).

4.2. EBP and professional providers

EBP also has significant implications for providers' professional status and identity, which have impacted providers response to the paradigm and the ways in which it is used in practice. While provider responses to EBP have been framed as resistance to maintain autonomy in the face of the threat posed by EBP, their responses have in fact been more complex.

Pope (2003) describes this fundamental tension by framing providers' resistance to EBP in terms of the social movement it represents. She describes providers' efforts to emphasize the art of their practice in response to the emphasis on science and standardization under EBP. Similarly, Dopson and colleagues (2003) describe how providers' professional nature affects their use and resistance to EBP. The authors attribute EBP's early success to its appeal to the professionalism of both individual providers and the biomedical research community. But they also describe how EBP is considered a threat to individual professional autonomy when it is perceived as an instrument of managerial control to regulate clinical action or contain costs.

Timmermans & Mauck (2005) similarly interpret polarization around EBP, particularly the use of clinical practice guidelines, through the lens of clinicians' professional status. On the one hand, clinical practice guidelines allow clinicians to retain professional status, as a source of specialized knowledge capable of reducing the practice variation that belies their technical expertise. On the other hand,

opponents fear that Clinical Practice Guidelines could lead to external coercion and algorithmic decision-making, which threaten to undermine and deprofessionalize the clinicians' status.

While studies of EBP in organizations frequently address the imposition of EBP on professional providers by non-professional managers, in many cases, providers are often managed by other clinical professionals, i.e., hybrid professional-managers. Hybrid managers' dual status provides them with recourse to both the self-governance and standing claims of professionals and the traditional oversight roles implied by bureaucratic organizational management. As a result, professional governance and organizational control are increasingly coupled (Kuhlmann et al. 2013; Spehar, Frich, and Kjekshus 2012).

In a similar vein, McDonald (2015) finds complex relationships among the use of guidelines, professional autonomy, and provider satisfaction beyond a "binary" framing in which degree of autonomy is directly linked to satisfaction. Rather than the longstanding view that decreased autonomy leads to decreased professional satisfaction, in many cases providers responded favorably to guidelines, and the binary framing is often misleading or overly conflictual.

This dissertation extends this line of research to describe how providers respond to a variety of organizational initiatives that imply different degrees of provider autonomy and the ways in which providers gain professional status and identity through the use of EBP.

5. Contributions

This dissertation addresses the meanings and uses of EBP in practice at the individual and organization levels in order to help explain and reconcile the empirically observed shortfalls in its clinical use, challenges in organizational EBP implementation, and persistent normative debates over how it should be used.

I address the following research questions:

What does EBP mean in practice to two key healthcare stakeholder groups: clinicians and administrators? And how do these meanings affect its use in practice?

- As a **clinical decision-making model**, how does EBP affect clinical practice?

- As an **organizational intervention**, how do organizations use EBP?

- As a **social and professional phenomenon**, how does EBP affect providers' roles and interactions with colleagues and their organizations?

At the individual level, EBP has reached a definition in theory that balances external evidence and local clinician expertise following a decade of sustained criticism and revision. However, little is known about what EBP means to providers and how it is actually used in practice. Despite the rational process outlined in theory (i.e., to develop a clinical question, consult high quality research-based materials, and apply them as appropriate to patients), the empirical research conducted on uses of evidence suggests that conduct of EBP in practice is often tacit, collectively constructed and *ad hoc*. And while EBP proponents have argued that it is consistent in theory with other models of clinical care, such as shared decision-making and patient-centered care, patient values and characteristics are often cited as a reason not to use EBP in practice, suggesting that practitioners do not view them as compatible. Despite considerable contention between EBP proponents and critics, and an empirical focus on input measures such as provider research literacy and output measures such as rates of use of specific Evidence-Based Treatments, both proponents and critics emphasize the importance of both provider discretion in applying evidence and appropriate attention to "best evidence." Their prescriptions for the conduct of clinical practice may be closer than they appear, hence, the semantics of the term "Evidence-Based Practice" may

impede actual progress on the application of evidence in practice. This dissertation explores what researchers, healthcare administrators and providers mean when they talk about Evidence-Based Practice, and what constitutes appropriate use of evidence in clinical decision-making.

At the organization level, little is known about the organizational role in enabling EBP. Despite theoretical models of EBP at the individual level, and considerable theoretical and empirical work on the *implementation* of EBP innovations by organizations, there is a gap in theory and empirical research on how organizations *form* EBP initiatives (Aarons and colleagues' Exploration and Preparation stages). The focus on implementation of specific, administrator-selected initiatives also represents a top-down perspective that may not fully capture how stakeholders actually conceive of EBP use in practice. The shift to bottom-up and integrative views in the policy implementation literature therefore may be a fruitful line of research in EBP implementation (Nilsen et al. 2013). While standardized outcome metrics have been proposed to conceptualize and evaluate EBP implementation (Proctor et al. 2011), this dissertation explores the extent to which those outcomes are salient to administrators, and notably, how organizations determine degrees of appropriate use along those outcomes, questions that have not yet been posed in the EBP implementation literature. Empirical implementation measures are implicitly aimed at maximizing dissemination and uptake of EBP innovations, though both proponents and critics typically agree that provider discretion in using EBP innovations is necessary. This dissertation explores the range of EBP activities that organizations use in practice and how organization administrators determine what constitutes appropriate EBP activity and implementation methods by the organization, how organization administrators conceive of their role in enabling EBP and how they form EBP initiatives to be implemented.

Finally, this dissertation extends the research on social construction of EBP to address not only how the meanings of evidence and specific resources (e.g., the use of tacit "mindlines" or specific Evidence-Based Treatments) are constructed, but also how providers and administrators construct the meaning of EBP writ large, i.e., how to use evidence in practice. The meaning of EBP in practice has not been studied, and yet it mediates the development and the ultimate use of evidence resources such as guidelines or specific Evidence-Based Treatments, the principal targets of existing empirical EBP research. Further, because the term "EBP" has become so polarizing, despite the theoretical emphasis on provider discretion, it is important to identify how these meanings and uses of EBP in practice affect stakeholder sentiment about EBP and the processes and decisions that are conducted in its name.

Chapter 3 - Methods

This dissertation presents the results of an interview-based, qualitative research study conducted from 2015 to 2019.

This research represents a "semantic turn," from existing Evidence-Based Practice (EBP) research, meaning that it identifies variation in theoretical constructs that have been understood as uniform in the research literature to date (Abbott 2004). This study identifies differences in the clinical, organizational, and inter-professional meanings of EBP among stakeholders that have not been captured in existing theoretical definitions or measures of EBP and that affect their views, interactions, and outcomes of EBP-related initiatives. As described in Chapter 1, stakeholders in some EBP programs have different understandings of what "true Evidence-Based Practice" means and it appears to impact how they practice and evaluate organizational programs. As described in Chapter 2, while EBP is narrowly framed as an individual clinical decision-making model, it takes on broader organizational and inter-professional uses in practice that have not been described theoretically within the literature. This semantic variation is significant because it compromises the construct validity of common EBP metrics such as its uptake, frequency of use and provider sentiment, i.e., the extent to which those metrics capture the desired construct. For example, measuring use of specific treatments as a proxy for EBP use would not capture 'appropriate' informed deviation from those treatments that would constitute EBP under the theoretical model. This descriptive research is intended to refine these constructs and identify emergent phenomena as part of a cycle of research in order to align theory and practice and "spur new inquiries" on EBP use (Lieberman 2016:1054).

1. Data Collection

1.1. Respondents

I conducted individual and focus group interviews over the period from Fall 2017 to Spring 2019 with a total of 53 respondents about their experiences with EBP in 15 healthcare organizations. When possible, data collection was conducted in person in the field in order to collect contextual field observations. Seventeen interviews were conducted over the phone due to logistical constraints. Because the study was intended to capture the range of meaning that healthcare workers attribute to the concept of EBP and of its uses in practice, inclusion criteria for potential respondents were intentionally broad. To qualify for the study, respondents had to have had experience as a clinical provider, healthcare administrator, healthcare quality improvement specialist, or healthcare researcher with some experience relating to "clinical decision-making" broadly construed.

I conducted the majority of my data collection at three sites: the "Department of Internal Medicine" (7 respondents) and "Department of Psychiatry" (10 respondents), located at the same academic medical center, and the "Department of Family Medicine" (19 respondents) located at another academic medical center. Within these departments, I gained access to the site through an interested department administrator and recruited participants based on a list of eligible providers or department administrators provided by the facilitating administrator. I describe these organizations below.

These cases were selected because I could stratify respondents across key characteristics that I expected to affect EBP views: resident vs. experienced provider status, medicine vs. mental health, department and medical center via the three departments in two medical centers (Trost 1986). These expected sources of variation are driven by the literature on EBP described in Chapter 2. Variation by resident vs. experienced status is expected due to the formative role medical school and residency education plays in EBP skills and understanding. Variation by medical vs. mental health specialty is expected due to the differences in professional society EBP training recommendations (in which the American Psychological Association emphasizes specific Evidence-Based Treatments) and the emergence of relativist models of EBP in mental health domains. Variation by organization is expected due to the emergence of organizational EBP interventions, which I expect will impact the resources and processes individual providers associate with the concept.

Additionally, I conducted 17 *ad hoc,* opportunistic interviews with individual healthcare workers interested in the subject of clinical decision-making or EBP. Six of these respondents were recruited at the Institute for Healthcare Improvement (IHI) National Forum, a healthcare quality improvement practitioner and researcher conference, as well as through spontaneous connections and snowball sampling. This opportunistic strategy enabled me to include individuals who had particular familiarity with EBP, as well as those who had little to no experience with EBP, in order to broaden the scope of views on the subject within the sample. Including these individuals allowed me to reduce sample bias arising from the organization recruitment strategy, as I expected that those organizations willing to engage in a research study on EBP were likely to have more developed conceptualization of EBP or successful EBP initiatives. Table 3.1 describes respondents by organization and background.

Because this research is aimed principally at identifying variation in practice in the concept of EBP that has previously been treated as uniform, I do not claim representativeness of the sample (e.g., with respect to the broader United States healthcare system), solely that it successfully identifies the existence of variation and indicates varied uses of EBP and disparate causes of this variation. Future quantitative research is necessary to estimate the prevalence of each concept and strength of relationships that I identify here.

Table 3.1. Respondents by organization and background.

Organization	Number of Interviews	Clinical Background	Administrative Role	Research Experience
Department of Psychiatry	10	9 (2 residents)	6	5
Department of Internal Medicine	7	6 (3 residents)	2	2
Department of Family Medicine	4 + 3 resident focus groups (3, 7, and 5 respondents)	19 (15 residents)	2	1
Misc. Mental Health	9	6	6	4
Misc. Medical	8	6 (1 resident)	7	1
Total	41 (53 participants)	46	23	13

1.2. Organization Overviews

For the purposes of this study, I include any organizations with administrative oversight of individual clinicians and a formal stake in how the individual uses EBP. These include clinics, hospitals/medical centers, and networks of medical centers.

Though this study draws upon all interviews, I focus in particular on the five organizations where respondents described multiple EBP-related activities, in order to compare EBP activities both within and across organizations. The five organizations are described briefly here.

1.2.1. Department of Psychiatry

The Department of Psychiatry belongs to a large (500+ bed) urban academic medical center. The department is comprised of roughly 60 psychiatrists, psychologists, nurse practitioners, social workers and therapists, including both adult and child clinics.

In addition to the psychiatry residency program, the Department of Psychiatry also has a growing research program in psychiatry, clinical psychology, and implementation science. The Department website features their numerous research centers. In particular, research programs in mental health disparities and Posttraumatic Stress Disorder (PTSD) are heavily influenced by the patient population. The department currently has six active clinical trials, including psychopharmacological, cognitive-behavioral, and alternative therapy treatments for a variety of behavioral health disorders.

The Department underwent a change in leadership just over two years prior to interviews. The current chief has made EBP a priority, developing research initiatives in the Department, restructuring clinics to provide specialized care in Cognitive Behavioral Therapy (CBT), an evidence-based psychotherapy, and hiring "clinician-scientists" to develop both the clinical interventions in CBT and the related research program. According to one department administrator, these initiatives are expected to increase EBP use and provider satisfaction by supplying the logistical capacity for those interested in offering more CBT, as well as relieving other providers who would prefer to focus on other treatment modalities. I interviewed the Department's Research Director, 2 residency program administrators, 3 clinic chiefs (for a total of 6 administrators), and 4 other members of the department.

1.2.2. Department of Family Medicine

The Department of Family Medicine is part of a multi-site integrated healthcare system across a major metropolitan area, located at a clinic the organization maintains in a smaller, diverse city in the region. The Department residency program has 8-10 residents per year, and it attracts physicians who are particularly committed to patient-centered care and the diverse population the department serves.

The Department also focuses on EBP. One member of the Department faculty regularly conducts research in EBP. EBP and Information Mastery, a complementary technique to EBP with a strong following in Family Medicine, are integrated into both resident education and general practice within the Department. The residency program incorporates didactics in EBP and Information Mastery over all three years, and both processes are regularly incorporated into clinical care and the precepting relationship between residents and attending physicians. I interviewed 2 administrators in the department, 2 attending physicians, and held focus groups with 15 residents.

1.2.3. Regional Network

The Regional Network is a regional health network of hospitals and clinics. This health system has significant research infrastructure in biomedical and healthcare delivery research, and it has a number of mechanisms in place to develop and disseminate clinical practice guidelines, best practice treatments,

and other clinical innovations. The health system writes many of its own clinical practice guidelines, often adapting national guidelines from the U.S. Preventive Services Task Force or other national societies for the patient population at the region level. I held one interview with the Chief Quality Officer for the network, who is responsible for identifying and disseminating best practices, clinical practice guidelines, and otherwise overseeing quality and quality improvement interventions across the region.

1.2.4. Multi-State Network

The Multi-State Network is a health network of hospitals and clinics. This health system also has research infrastructure in biomedical and healthcare delivery research, as well as mechanisms to identify, tailor, and disseminate guidelines and other best practices across the system. The mental health administration within the network has made EBP a priority in recent years, developing a clinical practice guideline, training providers in specific Evidence-Based Treatments (EBTs), and setting policy at the network level to encourage the use of EBP across the system. The Network has also implemented an information system to complement its existing EHR specifically for mental health services and is encouraging adoption across the network to measure and evaluate mental health services, as well as for clinicians to better understand and improve patient care. I interviewed three mental health administrators, two at the network level and one at the site level.

1.2.5. University Medical Center

The University Medical Center is an on-campus medical clinic at a medium-sized, private university. The Medical Center includes a primary care clinic, mental health and counseling program, and a number of medical specialties. Many of its patients are highly health literate due to the university-based patient population it serves. At the time of the interview, the University Medical Center was planning to develop and disseminate local clinical practice guidelines. I interviewed the Medical Director, who invited the Associate Medical Director for Primary Care (who is also a practicing primary care provider in the clinic and is leading the clinical practice guideline development project) to join us midway through the interview.

1.3. Interview process

Interviews were semi-structured, with separate interview guides for clinicians, administrators, and researchers (Appendix). The clinician interview guide focused primarily on their experiences using EBP and any organizational initiatives they have experienced, the administrator interview guide focused primarily on how they design and implement organizational EBP initiatives, and the researcher interview guide focused primarily on any clinical or administrative experience they have had and their beliefs about how their research about EBP should be applied in organizational contexts. The interview guides primarily targeted, in chronological order during the interview:

1. respondents' general conception of their organizational role,
2. the information sources they rely on, the use of evidence in their practice and organization,
3. their conceptualization of EBP,
4. examples of EBP use they have conducted or observed, and
5. any challenges that arise in applying it.

This format was used in order to encourage candid responses about the use of evidence and clinical decision-making prior to discussion of the term of EBP and organizational initiatives. Aside from these principal concepts, the interview was conducted in an open-ended manner, following respondents' description of their experiences conducting EBP or responses, experiences, and challenges in

organizational EBP initiatives, in order to gain their candid elucidation of what it means to use EBP in practice. Interviews and focus groups lasted from 25 minutes to 1.5 hours, with most lasting approximately 50 minutes. Most interviews were recorded and transcribed (4 interviews were not recorded because respondents opted out), and notes were taken in all cases.

2. Data Analysis

I use a grounded theory approach to inductively build theory on stakeholder views of EBP and organizational EBP initiatives (Glaser and Strauss 1967). This analysis consisted of 1) an initial round of inductive coding, 2) refinement of the initial codes into thematic concepts (described below), 3) analytical memos both of case description and of inductive themes that emerged, and 4) theory building based on the relationships identified among the thematic concepts. I wrote case description memos of each primary organization describing the setting, context, activities, interaction among stakeholders, and emergent trends in the use of EBP and organizational initiatives, as well as thematic memos about conceptual themes that emerged, including standing, autonomy, and their relationships; the development of the EBP models, and the various social and decision-making uses of evidence and EBP in practice.

I developed the study's principal concepts inductively. Because this research was designed first to identify meanings attributed to EBP in practice, in contrast to the formal definition used in theory, I observed emergent themes from responses to the question "What is EBP to you?" and grouped these responses by the predominant approach described in this response, without reference to the theoretical EBP model. Over repeated readings of this response and contextualization in the rest of the interview, analysis coalesced around the EBP implicit models presented in Chapter 4, at which point I analyzed the relationship between these emergent models and the theoretical model of EBP.

To identify my principal concepts, I identified common themes expressed by respondents, grouped them into concepts, and identified their relationships. As trends emerged at the individual (e.g., demonstrative uses of EBP) or organization (e.g., degree of internal variation in EBP use) levels, I revisited the codes and reread the other transcripts to compare the trends against other individuals or sites and to identify relationships with other concepts.

As I formed the concepts and relationships into more generalizable theory, I considered the literature on EBP, implementation science and management of professionals to reconcile the inductive concepts and relationships with existing theory. I refined concepts and relationships as necessary to be more congruent with any existing definitions and therefore generalizable; this alignment is particularly relevant for professional autonomy, which has been extensively studied in the medical context. Further details on the analysis can be found in Chapters 4-6. Limitations of the research methods are discussed in Chapter 7.

Chapter 4 - Evidence-Based Practice at the Individual Level: Implicit Models of Evidence-Based Practice and Implications for Clinical Practice

1. Introduction

As described in Chapter 2, Evidence-Based Practice (EBP) is at its core a technique for clinical practice at the individual provider level: its developers define it as "the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients" (Sackett et al. 1996). Across health service disciplines, a number of similar models have arisen to operationalize this definition (e.g., Dawes et al. 2005; Guyatt et al. 2002; Haynes et al. 2002a; McCracken and Marsh 2008; Stetler 2001), i.e., to prescriptively define the activities, information sources, and decision-making processes that constitute EBP for individual providers. The common thread throughout these models is that EBP is now generally described in theory as a decision-making process incorporating external research evidence, patient preferences, and clinical circumstances, all mediated by clinician expertise and decision-making (Haynes et al. 2002a).

In practice, I found that despite this comprehensive theoretical model, EBP took on a range of meanings to respondents. I observed three principal themes in the meaning of EBP to respondents, which I call *implicit models of EBP.* These implicit models of EBP represent specific aspects of the theoretical concept of EBP that the respondent reflexively associated with the concept; in prioritizing certain aspects of the EBP concept over others they represent fundamentally different approaches to applying evidence in the practice setting. The implicit models of EBP are not mutually exclusive; in theory stakeholders should—and many respondents did—endorse multiple, even all, of the aspects of EBP. But I found that respondents, even some of those who were highly familiar with EBP, emphasized certain aspects of EBP over others. This selective approach to EBP resulted in different approaches to the decision-making process, the types of materials that a provider incorporated, the conduct of ancillary activities such as practice data collection, and the role of the provider. These differences affect their perceptions of EBP, beliefs about how it should be conducted, and the specific activities and care decisions that they make. I call the three models: *Decision-Making EBP, Resource-Based EBP,* and *EBT-Based EBP (prioritized use of specific Evidence-Based Treatments).* Each model emphasized a different aspect of EBP decision-making, the *decision-making process* itself, the *input materials* to the decision, and the decision *outputs*, respectively.

This chapter details the different implicit models of EBP observed in practice during this study and their effects on clinical decision-making. First, I present the implicit models of EBP and demonstrate their differences. Next, I present the sources of variation in respondents' implicit EBP models and conceptions of evidence, including the educational and organizational factors that affect respondents' views of EBP. I then present the effects of EBP model on how providers obtain and use evidence in practice and discuss more generally how clinical uses of evidence vary. Finally, I demonstrate how perceptions of evidence affect clinical decisions for the specific case of colorectal cancer screening.

2. Implicit Models of EBP

I used respondents' answers to the question "What does EBP mean to you," along with any other comments they made about what EBP means or how they define it, to define the respondent's implicit

model of EBP. In most cases, respondents' other comments were consistent with the model implied by their response to the above question. In a small number of cases, respondents' description of how they use EBP in practice aligned more closely with another model, and I assign them the model that aligned more closely with their predominant response[3].

Implicit models of EBP represent the ways in which respondents made sense of and operationalized a broad, theoretical argument about how evidence should be considered in making clinical decisions. By and large, these models are tacit and context dependent; many respondents did not appear to have made this knowledge explicit prior to the interview and described how their use of EBP, however conceived, would change in certain circumstances.

Implicit models of EBP are not mutually exclusive[4]. Many respondents adhered primarily to a specific implicit model but endorsed other aspects of EBP that pertain more closely to another model. For example, EBP decision-making is inherently based on evidence, so respondents with a Decision-Making model frequently discussed the resources they considered; similarly, respondents with a Resource-Based model of EBP incorporated these resources into some form of decision-making, though this decision-making was often implicit, and, to them, was often considered to be outside the scope (or limits) of EBP. The implicit model merely represents the respondent's tacit lens for conceptualizing the complex idea of the use of evidence in clinical practice. Nevertheless, as I will show, these different starting points have important implications for what constitutes evidence to the provider, how it is used, and in some cases the resulting decisions that are made (Table 4.1). Within each implicit EBP model, responses varied in terms of just how far to go in using evidence and how adept or knowledgeable respondents were about the use of evidence in practice. In later chapters I will demonstrate that these models also affected how organizational initiatives were formed and perceived by providers and the roles and interactions of providers and other stakeholders that they entail.

2.1. Formal theory of EBP

Only one respondent explicitly recognized that a formal definition and theory of EBP exists. Notably, this respondent, in addition to his clinical work in Family Medicine, conducted research and taught workshops on EBP in his site's medical school and residency program.

> Interviewer: So first what is Evidence-Based Practice …?
> Respondent: Okay. *So you want me to give the official?* (emphasis added)
> Interviewer: Sure
> Respondent: So it's the conscious, judicious and there's a third adjective, use of the best evidence to take, combined with the values and preferences of patients, to make clinical decisions. Something like that.

He argued that this definition is impractical in the real-world, calling it a "tautology, really… Because using the best evidence...Evidence-Based Medicine uses the best evidence. That doesn't tell you anything." Instead, he said, he used another operational definition in his teaching; this definition included specific types of information and their relative credibility.

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[3] For example, one provider preferred responding to the definition question with an example rather than an explicit definition. However, throughout the interview, she clearly described how she incorporated evidence into decision-making, and therefore I considered her implicit model to be Decision-Making EBP.

[4] Nor, likely, are the models observed among this sample collectively exhaustive, as will be discussed in Chapter 7.

There's another definition that when I teach it I use. Which is the idea that there is a hierarchy of information in medicine, with some types of research being accorded greater credibility than others. … And that embodies the idea that some are more patient-oriented outcomes, and disease-oriented, and that there is various qualities that research designs vary in their ability to approximate the truth. If that makes sense, that gets a little philosophical. Is that clear, that concept?

This operational definition incorporated the resources related to EBP decision-making. So while this respondent focused on the decision-making aspect of EBP to intuit the concept, he focused on the resources and their relationship to clinical decisions (e.g., focusing on "patient-oriented" rather than "disease-oriented" outcomes) for a more practical understanding of the concept. Given the respondent's sophisticated understanding of EBP history and theory, it is unsurprising that his implicit model of the concept spanned multiple aspects of EBP, and addressed criteria for both evidence resources and their use in decision-making.

2.2. Decision-Making EBP – 'Applying Evidence and Deciding'

Respondents holding a *Decision-Making* model of EBP viewed EBP as a process of making clinical decisions that incorporate external evidence. Respondents adhering to this model of EBP still differed in what they considered evidence, what decisions they ultimately made with that information, and in how nuanced their description of this process was. This model is most consistent with the *process* aspects of the theoretical definition and model of EBP that arose in response to criticism of the movement, in which clinician expertise mediates the use of evidence and clinicians are expected to "pay due respect—no more, no less—to current best evidence in making decisions" (Haynes et al. 2002b:1350, 2002a).

One clinical psychology researcher described EBP in a way that emphasized the choices providers have in identifying and consuming evidence and specific treatment:

From my perspective, it's utilizing the literature to inform the practices that you *choose to use* in therapy. And so that would be being an informed consumer of the literature, being able to read it, access it, understand it, understand where the field is moving, particularly if you have a subspecialty in that area. *What are different treatments that you could try, and why would you try them?* … So that for me is what evidence-based practice is. (emphasis added)

This definition was replete with examples of decisions that constituted EBP to the provider, including decisions about both consumption of the literature (e.g., what to read, how to access, how to "understand where the field is moving"), as well as decisions about clinical care (e.g., "what are different treatments you could try").

Similarly, another clinical psychology researcher explicitly distinguished the conduct of EBP as broader than solely the specific Evidence-Based psychotherapies or treatments:

I think providers vary a lot in what they conceptualize as Evidence-Based care. And even in what they think of as evidence. Or what is good enough evidence. Most often, people use the term and are thinking only about the treatments. Evidence-Based care is more comprehensive, and it has to do with assessment, as well as care coordination. And so I think that you could find a lot of answers to that question depending on the provider you ask. I think you could tell from my answer that I tend to think of it in a more comprehensive way. So there's Evidence-Based psychotherapy, to be delivered in the context of Evidence-Based Practice.

For this respondent, EBP involved not only using specific, proven treatments, but also the broader assessment, care coordination, and associated decision-making a provider does to adapt care as necessary. Notably, he believed that providers and other stakeholders often conceive of EBP in narrower

terms of the specific Evidence-Based treatments, underscoring the differences in views about what constitutes EBP across the profession.

2.3. Resource-Based EBP – 'Staying up to date'

Respondents adhering to a Resource-Based model of EBP emphasized the various resources related to EBP, including the materials and tools that convey evidence in both research and practice settings. These respondents associate the practice of EBP with, for example, adherence to Clinical Practice Guidelines, reading research articles and journals, and consulting third-party point of care information resources. Under the Resource-Based model, EBP is synonymous with the specific evidence artifacts that communicate research or its clinical implications, but respondents occasionally disagreed with the implication that those resources should drive practice and set limits based on how applicable they believed them to be, framing these limits as limits to the use of EBP (rather than EBP decision-making under the Decision-Making model). This model corresponds most closely to the *input materials* described in the theoretical model, i.e., "the evidence" that providers learn to read and evaluate.

These respondents emphasized the importance of "staying up to date" on relevant medical literature, significant Randomized Controlled Trial (RCT) study results, or the current recommendations in Clinical Practice Guidelines. Like in the Decision-Making model, respondents saw external evidence as a source of information for providers to inform their practice. In contrast, while these respondents were acutely aware of the various types of external evidence to consider and incorporate in practice, they did not necessarily discuss *how* they applied this knowledge. Like in the EBT model, respondents focused on specific aspects of external evidence to use in practice. In contrast, they did not necessarily prioritize (or use at all) the best practices or clinical knowledge they found in the evidence.

For example, an intern in Internal Medicine described how the goal in conducting EBP would be to incorporate specific evidence resources such as guidelines, and ideally the primary literature, into decisions. However for him, it was particularly challenging to do so in light of the demands of everyday practice.

> Because I think that's what we're running into, cause day to day, when you're on the wards too, when I'm like okay how do I treat them, you'll look it up… And then you'll do it based on guidelines… And for the most part there's a few main ones that you go to … But then the question is, how much are you going, and where are the guidelines coming from?... And that is tough to do and you kind of trust a few resources, like you know you have Dynamed, you have Up To Date, you have the JAMA clinical series, you'll use those ones but it's always tough.

An attending psychiatrist similarly described EBP in terms of algorithms, decision support tools that list prioritized procedures and why a provider would use them:

> Usually when I think of Evidence-Based Practice I usually think a lot about it in terms of specifically treatment. Like algorithms for deciding what medicine to use or when to check for labs and things. How quickly to increase the dose of the medication or not or how slowly to taper off the medication or not. I think primarily of Evidence-Based Practice in those terms. Or if not medication I mean any form of treatment, whether it's a referral for therapy or for consultation or something.

For this respondent, EBP was related to the specific resource (algorithm) that she could consult to provide indication of clinical actions ("what medicine to use or when to check for labs") that have been demonstrated empirically.

2.4. Specific Evidence-Based Treatments – 'Prioritizing use of proven treatments'

Respondents holding an EBT-Based model of EBP prioritized the use of specific Evidence-Based Treatments (EBTs), so-called because they have been consistently demonstrated in empirical research as effective. For these respondents, if a treatment has been shown to have a positive effect or a greater positive effect than other treatments in similar clinical situations, it should be used preferentially over other treatment methods that either have not been tested or have been shown to have a lesser effect than the first-line EBT. Some respondents adhering to this model argued that EBTs should be used as default, first-line treatments, though they may not have consulted the supporting evidence themselves. Respondents adhering to this view of EBP also incorporated room for clinician discretion and decision-making, like in the Decision-Making model. In some cases, they argued that the treatment as designed actually afforded room for sufficient clinician discretion. In other cases, they framed decision-making as a deviation from the default EBT to be documented and learned from as a potential long-term benefit. This approach to EBP most corresponds with the *output* of decisions made under EBP: EBP is operationalized by providers' preferential choice of specific empirically tested and generalizable clinical interventions.

A clinical research psychologist similarly described EBP as preferentially using empirically proven treatments in a manner consistent with their design:

> And so what that means is you know first, if there is a treatment or an intervention that has evidence, you should do that. And you should deliver it as it was intended. … The other thing is if you are conducting something, doing something more novel, that you gather evidence on it. And that's part of what Evidence-Based Medicine is as well

This respondent clearly endorsed prioritizing specific interventions that have supporting evidence and using them in a manner that adheres closely to the treatment design[5]. In contrast to the Decision-Making model, which uses evidence as an input into provider decisions, under the EBT-Based model, provider decision-making is constrained in this respondent's view within the range of discretion designed into the treatment, in order to achieve the empirically documented benefits that the treatment affords. When the provider does decide to do something "more novel," it is only after at least considering one of the proven treatments, and the provider should document it in order to generate evidence.

Similarly, a Department of Psychiatry administrator described EBP as based on the supporting data for specific treatments:

> So coming as a non-provider, and as a researcher, for me it's all about data. That's how I define Evidence-Based Treatment. Is do we have scientific, good scientific data that show that if someone comes in with PTSD this is kind of the course of action that should happen. If someone comes in with you know OCD, or whatever the case may be, that we have data to support the type of treatment that we're doing. And so that's how I define Evidence-Based Treatment. This idea of you come in with … let's just say OCD, we already know exposure response therapy, behavioral therapy

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[5] This comment refers primarily to manualized psychotherapy treatments, which provide guidance for specific approaches that a mental health provider will use to address a particular disorder over a series of clinical sessions. In manualized treatments, the provider typically has considerable discretion as to how to apply each component of the treatment within each session. Many scholars argue, like the respondent, that it is important to accurately follow and apply the various treatment components as they were designed in order to benefit from the mechanism of action that was designed and empirically tested.

is very effective for OCD, and then you end up just doing talk therapy for three, four years, not helpful [laughs].

The respondent established the existence of supporting data as a principal criterion for eligible "course[s] of action" that a provider should take and referred to specific treatments that do and do not fit that criterion. The respondent then concluded that the provider should prioritize one of the treatments that has evidence to support it. Though I used the term "Evidence-Based Practice" in all interviews, this respondent consistently used the term "Evidence-Based Treatment[s]," further demonstrating that, to the respondent, the specific treatments that fit evidence criteria and their preferential use were synonymous with the conduct of EBP.

Table 4.1. Implicit models of EBP and their relation to the theoretical model

EBP Model	Emphasizes	Possible limitations, variation	Aspect of theory
Decision-Making	Incorporating evidence as a clinical decision-making input among other clinical considerations	This implicit model may not indicate which resources providers actually consult, which clinical practices they ultimately use.	*Process*, the provider role in the EBP decision
Resource-Based	Consultation of specific, high-quality evidence resources that indicate empirically demonstrated effects of specific clinical interventions	Individual resources that providers use may not represent complete or certain science (e.g., individual research articles); this implicit model may not indicate how the resources are actually used in decisions, which treatments providers actually choose as a result	*Inputs*, the evidence artifacts considered by the provider in the EBP decision
EBT-Based	Preferential use of specific Evidence-Based Treatments that have been demonstrated empirically to show benefit	This implicit model may not include the decision process about whether the treatment is right for the individual patient; providers may not fully understand the evidence supporting the treatment and any conditions for use.	*Output* of EBP decisions, the clinical practices actually used as a result of the EBP decision

3. <u>Sources of variation - Why do stakeholders endorse specific models of EBP and use evidence differently?</u>

Many factors influenced how stakeholders viewed EBP and, ultimately, the implicit model of EBP that their views most aligned with. Sources such as medical school, psychology and social work curricula, residency programs, colleagues, medical journals, conferences, and even the popular press all discuss EBP. These sources influenced how providers constructed the meaning of this concept and how their views of EBP changed over time. Especially since most respondents did not have a formal understanding of the EBP

model and theory, these indirect sources strongly impacted how providers thought about and used evidence.

The three organizations studied in detail used and communicated EBP in different ways, and these differences were reflected in the implicit model distribution of respondents at each site. I observed a strong relationship between EBP model and organization, with notable exceptions based on certain individuals' unique experiences. Many individuals within an organization held a similar EBP model, suggesting that these views are developed either within the organization or within their greater practice community, i.e., at the profession-level.

3.1. Organization-level sources of variation

As demonstrated in Table 4.2, the organizations I studied in detail differed in both the predominant EBP model at the site and the distribution of EBP models that members endorsed. I will analyze organizational EBP initiatives in more detail in Chapter 5; I describe them briefly here to explain their effects on individual implicit EBP models and clinical decision-making.

Table 4.2. Number of adherents to Implicit EBP Models by organization[6]

	Medicine			Mental Health	
EBP Model	**Family Medicine**	**Internal Medicine**	**Misc. Medical**	**Dept. of Psychiatry**	**Misc. Mental Health**
Decision-Making	4 individuals + General agreement in resident focus groups (15)	0	0	2	4
EBT	0	1	3	5	4
Resource-Based	0	5	2	3	0

3.1.1. Department of Family Medicine: Coherent use of a specific decision-making model

The Department of Family Medicine had training in EBP that directly addressed the concept's meaning. In this department, residents underwent didactics and workshops in EBP over all three years of residency; the approach to EBP that they taught was also deeply ingrained in clinical practice, including the department's precepting processes.

Residents in the department were not explicitly recruited for their interest or experience in EBP or research. As one faculty member noted, "we select a certain group here. But it's certainly not because they're Evidence-Based Medicine gurus." When residents discussed why they chose the program, they underscored their passion for the underserved patient population and did not reference EBP.

Rather, residents developed a coherent understanding of EBP during the program, and they came to view it as a core of their identity as physicians. One resident said "I think we're very proud here that

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[6] As described in this section, the primary sources of variation observed for EBP model are organization and profession. In this table, individuals are grouped by their organization and broad specialty (medicine/mental health). Individuals outside the three principal organizations are grouped into a miscellaneous category by specialty, as there were no more than 2 respondents per site.

we use Evidence-Based Medicine." Another resident underscored that "learning how you learn is really important to how we do residency here."

While the training model used to teach EBP at this site emphasized the decision-making aspects of EBP, it also specifically trained providers in thinking about EBP resources (as noted by the faculty member above), so the approach within the department subsumed the Decision-Making and Resource-Based models of EBP.

The Department's training and culture in EBP was so strong that, for example, multiple respondents used the word "gestalt" in discussing EBP, which no other respondents used. For example, one resident said:

> I think of Evidence-Based Practice as making decisions for patients based on data, such as clinical trials, that's actually been proven and not just on gestalt, or on your own bias based on one or two patients that you treated.

This finding suggests that department members had a common local language for talking about EBP and that EBP was well-integrated into their daily interactions and understanding of how to conduct clinical practice.

3.1.2. Department of Internal Medicine: Evidence resources as "currency"

On the opposite end of the spectrum, the Department of Internal Medicine had a number of department-level EBP initiatives, but these centered on providing "journal clubs" and other resources that providers use to access the literature and stay up to date rather than a coherent, department-wide EBP-based workflow. Resources the department provided include: internal guidelines, third party point of care references such as UpToDate, journal clubs, and funding to attend conferences.

Providers in the department generally developed their own model of EBP practice individually and collaboratively with groups of colleagues. However, their strong individual focus on "staying up to date," coupled with the department's provision of evidence resources, reinforced providers' focus on the consumption and application of evidence resources as the fundamental aspect of EBP.

Respondents viewed "staying up to date" on the evidence and research literature as integral to the role of a provider, particularly in an academic medical center. However, it was each provider's responsibility to determine the best way to do so for themselves. As one attending physician remarked:

> Aside from [site-wide screening] programs, and like administrative clinic-wide efforts that happen, then it's up to the individual clinician to decide what is evidence, to always be up to date, to always stay on top of the literature and know what is the evidence for doing, recommending or screening or doing treatments or diagnosis. So I feel that everyone who's at an academic medical center tends to regard staying up to date and staying evidence-based as very important.

Providers in the department shared resources and techniques for staying up to date informally and collegially. The precepting relationship was a primary mechanism by which respondents at this site developed their model of EBP — based on sharing resources from preceptor to resident and vice versa. As the attending physician noted:

> especially since you're teaching trainees, residents are gonna keep you up to date as well, and we also do teaching and conferences to make sure we stay up to date.

These interactions occurred spontaneously as relevant clinical situations arose. One intern described how her preceptor shared a blog reference to help her stay up to date on a particular treatment, which she then subscribed to and incorporated as a resource she could use in other situations:

And then in primary care clinic, one of my preceptors once forwarded me, because we were wondering for example how effective gabapentins are for a certain type of pain…she forwarded me this email blog that this physician writes where he analyzes articles specifically looking at analyzing the evidence behind them, how valid the study is, and limitations, things like that. So I thought that was really helpful, I ended up subscribing to him so if I ever have a chance, I'll comment on say use of gabapentin or use of when to screen for diabetes, things like that. So I thought that was helpful.

The department's emphasis on disseminating specific resources reinforced the tendency of respondents at this site to heavily weight evidence resources over other aspects of the EBP concept. Evidence resources were the currency of EBP in collegial relations at the organization, as respondents helped each other stay up to date and exchanged articles with their colleagues informally and in clinical notes. However, each respondent developed a slightly different view of which resources to rely on based on their different past experiences, their interactions with colleagues and the resources they share, and the methods that worked best for them.

3.1.3. Department of Psychiatry: A diverse department with many different EBP initiatives

In between these two approaches to EBP implementation—one highly centralized and the other more individualized—the Department of Psychiatry featured a diverse mix of different kinds of targeted organizational EBP initiatives and individual EBP views that jointly interacted to shape EBP use and clinical practice in the department.

The department included psychiatrists, psychologists, and social workers with a broad range of experience with EBP. For example, respondents from the site included a psychiatrist who had no formal training in EBP, clinical research psychologists who developed, implemented and tested specific EBTs, and a clinical social worker whose Master's program had a high emphasis on Cognitive Behavioral Therapy (CBT) and EBTs in general. As a result of their diverse experiences, respondents' implicit models of EBP differed widely (Table 4.3).

Table 4.3. Number of Department of Psychiatry adherents to Implicit EBP Models by Mental Health Profession

Implicit EBP Model	Psychiatry	Psychology	Public Health	Social Work
Decision-Making	1	1		
EBTs-Based	2	1	1	1
Resource-Based	3			

Most respondents' implicit models followed from their prior experience. In many cases, respondents directly cited their educational program in describing what EBP is. For example, the clinical social worker said his training in CBT informed everything he did as a provider; he said there were components of CBT in everything he did. This EBT-based model of EBP was therefore driven by his training; the use of this particular treatment is shorthand for the concept of EBP writ large because it is a first-line treatment with sufficient evidence supporting its effectiveness.

However, the department's recent EBP initiatives impacted some respondents' views of EBP as well. The department recently hired clinical research psychologists with a nuanced implicit model of EBP to train department providers of all three professions in CBT and adapted clinic structures to provide dedicated treatment in CBT for certain conditions.

A psychiatrist without formal training in EBP recently became immersed in certain Evidence-Based psychotherapies, in light of the department's new personnel and new clinics to provide CBT for psychotic disorders. The arrival of Evidence-Based psychotherapy experts, particularly in CBT, aligned with and supported his personal interest in alternatives to medication, though he did not consider psychotherapy his area of expertise. As a result, he developed an interest in designing a CBT clinic for insomnia. He also thought about when and why a provider might use various psychotherapies and sought psychotherapy-trained colleagues to collaborate with on this effort:

> I'm a psychiatrist, I don't really know, it's not really my area of expertise, when would you use CBT versus DBT [psychotherapies]? Are there certain people, is there a certain profile? Someone for whom DBT is going to be more effective, they're going to be able to make better use of it, than CBT for example. When do you use supportive psychotherapy, as opposed to focusing on skill-building? What are the necessary requirements for someone to be in a place where they actually can access CBT? And what kinds of things are going to predict that they're not going to make very good use of it? They're actually fairly sophisticated questions, I think, that I don't know the answer to. And so I feel like I really need someone who really knows that stuff, to really help us understand how to do it. Because I think it's naive to think well CBT's evidence-based and therefore we're going to do CBT for everybody.

These changes also affected resident education, as residents received a diverse mix of perspectives on EBP meaning and use from the psychologists and psychiatrists they trained with. The psychiatry resident respondents in the department were heavily influenced by the evidence resources they learned and interacted with through departmental activities such as journal clubs and lectures, but they believed clinical care should incorporate more decision making and personalization. They had a unique perspective within the department because they were medically trained, so they gained exposure to similar standards of evidence and resource evaluation as the medical residents above, but through department initiatives also had significant training with a range of psychology supervisors, including those specialized in CBT and psychodynamic psychotherapy. Both residents referred directly to papers when asked what EBP means, but were uncomfortable with this approach, describing single articles as important but insufficient for decision-making. As one resident remarked:

> So I'm not a huge fan of research, … You know I read the articles and I'm like just tell me [laughs], tell me what works and what doesn't work … But I think it is important to be able to understand what you're reading, and I think being in residency, this is a stage of training, where we do get instruction, like in journal club, where we'll have to pick an article and present it, and when we're not presenting we're the audience of someone else presenting, so you learn how to read these research articles, and I think that's important … I think what's been good for me at least is the way that we've done it … the supervisor did it in a way where it's like not everyone has to be a researcher, but this is what you look for. So it breaks it down where it's more digestible. So I think it's important to know if you don't understand something, or if it's not making sense, you should know that you can go back to the literature and do a search and know how to do that search. And pull up articles and read them and make a clinical judgment based on it.

This resident associated the concept of EBP directly with research and learning to read and assess individual articles, but through their interactions with their supervisors in both pharmacology and psychotherapy incorporated other aspects of decision-making that they believe is important. Residents developed and merged the perspectives of the psychiatrists and psychologists around them. Because the department maintained a highly diverse curriculum, residents received and integrated many perspectives on EBP. The view that "not everyone has to be a researcher" incorporated both the criteria for specific evidence resources as well as the holistic decision-making approach that the department's psychologists

endorsed. Though they may have resisted certain aspects of EBP as taught at the site, such as the requirement to stay up to date on research literature and incorporate individual articles in clinical judgment, they gained the skills in doing so and were comfortable knowing what to look for if they needed to.

3.2. Profession-level variation and causes

While EBP-targeted organizational dynamics and initiatives affected many respondents' EBP model, most respondents' model was formed either by or in response to profession-level causes. Many respondents' views of EBP were shaped by their medical, psychology, or social work training, and these views were reinforced over their careers through their interactions with colleagues, as described above, and professional societies through conferences, journals, and other communications. In particular, the emphasis during training on scientific article comprehension, guideline consultation, and literature review skills led many respondents—those medically trained in particular—to adopt a Resource-Based or EBT-Based view of EBP in the absence of a dedicated organization-level initiative. However, some respondents, primarily in mental health, developed their views of EBP in opposition to the views of EBP that they experienced in their training, preferring to incorporate more decision-making into the concept. This is especially the case in mental health because mental health stakeholders have historically focused on specific empirically-supported treatments (an EBT-based model), which the American Psychological Association attempted to rectify by defining EBP more broadly (APA Presidential Task Force on Evidence-Based Practice 2006). Those providers tended either to develop a more Decision-Making model of EBP (incorporating decision-making into the scope EBP) or discussed their skepticism about [EBT-based] EBP because they felt it did not adequately account for decision-making (viewing decision-making as in tension with EBP and rejecting EBP as a result).

3.2.1. Professional Training Curriculum

Training in EBP is a core component of medical schools and residency program training (Lehane et al. 2019). As one psychiatry resident noted, he had learned about EBP "since med school, like it's it's...really honing it in, since med school. [laughs] Across the board." Many respondents described their medical school training in EBP as heavily focused on the skills necessary to consult and comprehend specific resources, notably research articles, clinical practice guidelines, and third-party point of care references, in line with the approach prescribed by the original EBP developers (Guyatt et al. 2002). Comparing the Internal Medicine and Family Medicine cases highlights the medical school curriculum's influence on providers' implicit EBP models, as well as the strong effect a dedicated organizational EBP training program (e.g., in residency) has in mediating the medical school effect on EBP model for those individuals who undergo such a program. Medical schools provide the skills necessary to consume evidence, but many respondents did not feel it adequately prepared them to apply those skills to clinical practice in EBP. Those that underwent practical training in EBP described having a new, more refined view of what EBP means in practice; those who did not often endeavored to incorporate those skills into practice but often felt they were not directly relevant and only sporadically used EBP as a result.

Family Medicine residents described their medical school training as very similar to the Internal Medicine residents', highly focused on how to use various sources of evidence and read, understand, and evaluate journal articles. Their comments on their own medical school training in comparison to their current practice indicated how the Resource-Based and EBT-Based views of Internal Medicine department residents arose in the absence of similar training.

The Family Medicine residents underscored that their medical school education emphasized knowledge of specific evidence resources, especially how to read academic medical literature. The one

Family Medicine resident, Dr. Smith, who trained at the same site, was the sole exception, as she described the coherent training she received in how to apply evidence to clinical practice as opposed to merely reading and understanding the literature. Her focus group colleagues noted that, in the absence of similar practical training during medical school, they did not understand how to apply the resources at the time, whereas they subsequently learned to do so because of the practical training they received at the site during residency:

> Dr. Smith: So I went [here] for medical school and we had courses that were specifically on Evidence-Based Medicine and it wasn't on what is the evidence, it wasn't on what is the medicine now, it was on how do we find what is Evidence-Based Medicine? What databases do you use and how do we read them and how do you interpret them?
> Interviewer: Is that common in a lot of other med schools?
> Colleague 1: Mmm-mm. Like a little - little sprinkle [laughs].
> Interviewer: But not a full course?
> Colleague 1: Yeah, maybe someone comes and they're like "Use Evidence" [laughs]. And gives you a Powerpoint about evidence [laughs]
> Colleague 2: Definitely not the practice of 'oh I don't know this and I don't know what the next medication to try in this person who's failed this therapy is, let's check Dynamed together.' That's something that I was exposed to for the first time here.
> Colleague 1: Mm yeah. And I think that's done a lot in clinic. With our preceptors, a lot of times we have questions and they'll look it up at the same time as us
> Colleague 2: Yup.
> Colleague 1: And see what they think about it, so it's nice to see that. They aren't just all-knowing sources of knowledge, and are open to revising things.

Those with a Decision-Making model of EBP at the Family Medicine department were explicitly taught the model, with a dedicated educational initiative in an approach called Information Mastery within the organization residency program's didactic curriculum. Information Mastery is also endorsed more broadly by the American Academy of Family Physicians (2015) and is used in other residencies. One attending physician who conducted residency at another site noted that a similar approach was used in her program, though she found the current Family Medicine department more "progressive" in this regard, which attracted her to the department:

> So our methodology goes back to I think the late nineties. So we use this thing, it's called POEM, P-O-E-M, Patient Oriented Evidence that Matters. We use that in terms of our final years in medical school, especially during our Family Medicine rotation, we had didactics which focused on this.

3.2.2. EBP Models defined in response to profession-level trends

The way providers discussed other organizations indicated profession-wide trends and the aspects they found unique about their organization's EBP interventions. That is, discussing other organizations was a way of articulating how their view of EBP had been shaped in contrast to the standard view they experienced among external colleagues in their profession.

3.2.2.1. The Department of Family Medicine

One Family Medicine resident described receiving pushback himself on rotations in other departments when trying to develop and support treatment plans with evidence. In this case, the coherence between his model of EBP and the approach to EBP in the hosting department directly affected the treatment decisions he chose to make and advocate.

> It's difficult for me when I'm under a different specialty, so we do rotations in our first year under lots of different specialties and our second and third year we do it a few times in the year, and my

feeling is often like I'm a guest in someone else's home, and I will tell them what I think, and what information I've reviewed and why I want to do what I want to do, but if I get pushback, I'm not as, I don't think that I do as much to try to make sure that we're going with my plan that I think is evidence-based. Unless I for whatever reason feel super, super strong and confident about it. Otherwise I feel like, you know what, I'm only here for a few weeks, and nothing that I do is really going to change something here, so I did tell you what I thought and you can choose to do something different, if it's supported and gets the outcome that we're looking for, then we'll just do [that].

Family Medicine residents also described other organizations that were less accepting of certain approaches to EBP. One intern remarked that a friend at another institution received pushback for looking up an approach on Dynamed, a third-party point of care information resource, and choosing a treatment different from the organization's standard of care.

I have a couple other friends in family medicine programs, we talk about this stuff. And one of my friends who's out in California has had a bunch of experiences where she'll be looking up the Dynamed stuff, and will get pushback in clinic for wanting to do that. … Like that's not what we, what we've always done is this other thing.

3.2.2.2. Mental Health: Split between Decision-Making and EBT-Based models

Among respondents outside the Department of Family Medicine endorsing a Decision-Making view, seven were in mental health professions; only one was in a medical profession (nursing, though he is currently employed as a patient safety consultant and does not practice). Further, many of these respondents described their view *in response to* what they perceive as a dominant EBT-based or Resource-Based approach, mitigating an overly rigid application of the evidence or EBTs in practice.

Mental health respondents were essentially evenly split between the EBT-Based and Decision-Making models of EBP, setting up significantly different viewpoints about how providers should use specific treatments and the degree of decision-making and fidelity they should use. Many mental health respondents incorporated a Decision-Making component into their mental model of EBP to counterbalance what they perceived as over-emphasis on evidence or specific Evidence-Based Treatments at the profession-level.

As one Department of Psychiatry resident noted, demonstrating her beliefs about the limits to applying evidence in practice:

I think looking at the evidence is, that's how you're trained from day one in medical school. Having said that, I think some folks are more into the research and some folks are more just into the clinical practice, and I'd be the latter [laughs]. … Yeah, I'd be the latter. Because sometimes although the evidence shows one thing, sometimes it looks different on the clinical end.

For this respondent, the predominant Resource-Based model she perceived based on her medical school training as a psychiatrist was incomplete, and needed to be complemented by clinical decision-making because she believed the evidence was not fully applicable to the clinical setting and therefore should not dictate care. Whether or not this belief is justified by limited relevant existing evidence, this comment demonstrates the approach to EBP that she took as a result. Because her implicit mental model of EBP was associated with specific resources, it did not leave room for a more adaptive approach to evidence use (e.g., as under the Decision-Making model). Therefore, for her, the limitations of the evidence base also implied that the EBP model writ large was less relevant.

To contrast, a clinical psychologist noted that he was trained in a psychology program that emphasized EBP, but as he read early theoretical papers in Evidence-Based Medicine (EBM), he realized

that his program had primarily emphasized specific EBTs, and in his view had not incorporated a sufficiently strong decision-making component:

> I can't speak for the other professions or other programs, but my program was very … research heavy. It was a very into teaching only 'Evidence-Based' program. And … it was not taught to me, in that way [as described by the original EBP articles, as a balance of evidence, clinical expertise, and patient characteristics]. … We were taught something a lot more rudimentary. Which is basically that one arm of that three-armed thing, which is some treatments have been tested and have sort of proven themselves quote unquote and you should be using those. That's what I was taught. And I think that's the prevailing narrative in psychology, and then I would say psychiatry too, from what I've seen. I'm involved in training certain psychiatric residents here in therapy and that's the same narrative more or less as well.

4. Effects – How do EBP Models affect providers' understanding and use of evidence?

Respondents with different EBP models not only conceptualized evidence differently but used evidence differently as well.

I found three principal ways respondents used evidence in clinical decision-making: to inform specific treatment decisions, to stay up to date generally, and to communicate and persuade others about a course of action[7]. In carrying out these tasks[8], respondents with different EBP models consult different sources of evidence, evaluate evidence differently, and in some cases, apply the evidence differently.

These differences were most prominent among mental health respondents, where the differences between Decision-Making and Resource-Based/EBT-Based approaches led to different beliefs about how providers should interpret treatment applicability for individual patients and fidelity to EBTs and guidelines. While these debates have traditionally been framed in terms of provider autonomy versus treatment fidelity, I demonstrate that they also represent broader questions about the role of evidence in clinical decision-making, as indicated by respondents' EBP model. In medical care, I demonstrate how provider beliefs about the use of evidence in different contexts led them to make different choices regarding colorectal cancer screening.

4.1. Using evidence to inform specific treatment decisions at the point of care

Respondents actively searched for relevant evidence to inform specific treatment decisions at the point of care, and these activities varied by professional specialty. Medical respondents with Decision-Making and Resource-Based models of EBP frequently consulted third party resources, such as UpToDate or Dynamed, at the point of care; consulting these references was a part of their clinical workflow. However, they framed this activity differently: for Decision-Making respondents, consulting these references was an acceptable part of conducting EBP; for Resource-Based respondents, consulting these references was more of a shortcut: less rigorous than other EBP resources like journal articles and guidelines but easier to consult in everyday practice. Interestingly, the third-party reference tools acted as portals to the evidence, providers generally did not look guidelines up directly (e.g., on the U.S.

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[7] The use of evidence to communicate clinical decisions with colleagues will be discussed at length in Chapter 6, as part of a broader analysis of providers' use of EBP in their interprofessional relationships.
[8] or, for non-clinical stakeholders, in their expectations of providers carrying out these tasks

Preventive Services Task Force website), instead passing through a reference tool that provided a variety of evidence including articles, systematic reviews, summaries, and guidelines.

Mental health respondents tended to consult any relevant evidence resources well before a clinical session because of the significant time investment it takes to train in psychotherapies and integrate them into one's clinical practice. They therefore familiarized themselves with whatever evidence resources they found relevant but did not tend to consult them within the clinical workflow.

4.1.1. Point of care reference tools

In the Family Medicine department, providers regularly consulted evidence at the point of care, primarily through resources that were easy to use but met a standard of evidence they considered acceptable.

4.1.1.1. Standard of evidence

Of the two predominant third-party resources, the Family Medicine Residency Director considered Dynamed more credible than UpToDate because it did not contain expert opinion; he said that UpToDate entries contained expert opinion and were not clear about which recommendations were pure research evidence and which were expert opinion:

> UpToDate, we try to push residents away from, because it's not particularly up to date. … And there's a lot of expert opinion embedded in there. There's a lot of really good information in there, but one of the big critiques of that is, do you know what the level of evidence is? And so in Dynamed when you look something up, at the end of each thing, it will give you the criteria on what the strength of evidence is supporting that, and a link to that study if you want to dig down and see that. In UpToDate you'll be reading something about the same subject and it will say that same information but then in the next sentence it says like 'in my practice, what we do,' it's like OH, that does not sound particularly evidence-based, that sounds like we're over to expert opinion now. Which is fine, if that's all there is, but you want that transparency, of like we have now just exited the world of this is from a Cochrane database meta-analysis that looked at fifteen thousand patients [on the one hand] and this is what we do in our practice because there is no evidence and it seems to make sense [on the other]. And that's standard of care. But you want to know that level of evidence behind what you're doing.

UpToDate was available to providers and many used it (particularly if they were familiar with it from their medical school training), but Dynamed had more departmental support, being offered and taught by the department as part of resident EBP didactics. Interns also agreed with the director's distinction between UpToDate and Dynamed; their agreement appeared to closely follow the department's pedagogy about the tools, mirroring the view that UpToDate is "more expert opinion" and "just this is what we do and why." However, interns also cited logistical and ease-of-use benefits of UpToDate, which occasionally outweighed the perceived legitimacy benefits of Dynamed and affected what information they obtained in practice.

> Intern 2: There's a lot of times that I'm like, oh I guess I shouldn't trust what UpToDate is telling me about this dose. I should probably go on, usually Lexicomp and Dynamed will agree on dosages but sometimes UpToDate doesn't, I guess because it's more expert opinion, so you can take it with a grain of salt sometimes [laughs].
> Intern 1: I do find that UpToDate is a lot more user friendly, so sometimes I will jump to that, just because if I need like an answer quickly, especially if it's something that I know is going to be there and it's going to be right. It's an easy thing. But I wouldn't say they always differ, but there are differences. And what's nice about Dynamed is that it tells you why there might be a difference. Rather than just saying this is what we recommend,
> Intern 2: Mhmm

Intern 1: It's like this is what we recommend and this is the most recent study that backs this up and why we say this. So you can actually click on that if you care. Whereas UpToDate is just like this is what we do and why. This is what we do.
Intern 2: Sometimes UpToDate guidelines are a little crazy. Sometimes I feel like the preceptors are like oh I've never done that. That's not great [laughs].

4.1.1.2. Workflow and collaboration

As one Family Medicine intern noted, preceptors' and residents' joint consultation of Dynamed was commonly incorporated into the precepting process across the department, because it was easy to use and was considered sufficiently evidence-based within the department. Further, introducing consultation of third party resources into the clinic workflow helped attending and resident providers alike "both learn" and maintain their base of clinical information:

> most of the learning is done in clinic … with the preceptors, who, I find a lot of the preceptors here are very good about[saying] I don't know how to do that either, let's look it up together and both learn. And we spend five minutes looking it up together.

As a third year resident confirmed, preceptors were open to adapting treatment decisions if the resident showed that Dynamed indicated a more "evidence-based" approach, and this was an opportunity for both parties to "educate ourselves":

> You know this is the diagnosis that I think they have, and this is what I'm going to treat them with, and sometimes they'll [the preceptor] be surprised like oh, that doesn't sound like it's first line therapy, because maybe the practice has changed and we had a chance to look up what the most recent first line therapy is. And they'll go back and say you know what, you're right. Or maybe we have it wrong and they'll look at the evidence as well and say hey actually, because of these other factors, this is what we should be doing based on the evidence. So I think it's a two way conversation where we're often learning to educate ourselves, and from what we know, but at times it's also to get educated by our instructors or sometimes they learn something from us when we're giving them that info.

Providers also had rules of thumb about when they consulted evidence and what sources to use. As one third year resident remarked, he would always consult Lexicomp, another point of care database, whenever he prescribed medication:

> Well I always think about meds, prescribing meds. I would never want my doc to just prescribe a med off the top of their head. I don't care how many times they've prescribed it [laughs]. I think that's usually where I see it the most with my preceptor. You want to treat this thing, let's just be clear about what the treatment is. We'll look that up, and we'll see that evidence shows that in, I don't know African Americans you don't use lisinopril for hypertension.

4.1.1.3. Differing views on expert opinion

Similarly, most medical providers in the Department of Internal Medicine regularly consulted third party point of care resources to quickly gain information about specific treatment decisions. One Internal Medicine attending physician described UpToDate use as so common that "it's almost like a Google it. Go UpToDate it."

In the Family Medicine department, Dynamed entries were perceived as more in line with their evidence criteria because it did not contain expert opinion. To contrast, in the Internal Medicine department, UpToDate and other third party tools were information sources for the point of care, where the priority was ease of access to comprehensible, informed decision support, with additional access to

underlying evidence when necessary. They were satisfied with the tool's overall reputability and less concerned in practice with the degree of expert opinion versus other types of evidence.

Some members of the Internal Medicine department actually preferred the expert opinion offered by UpToDate to Dynamed because it offered more "breadth" to situate the pure research findings, demonstrating different criteria for what constituted evidence for clinical decision-making. As an Internal Medicine attending physician remarked:

> probably ninety something percent of people use [UpToDate]. If not it might even be closer to a hundred percent. There's another thing called Dynamed, which is less wordy, and more like bullet points, that some of the younger residents, some of the residents like to use, the students, but I feel like UpToDate gives you more breadth to it.

4.1.2. Single, consequential articles that merit a change in practice

For many with a Resource-Based view, articles were the 'currency' of collegial interactions that providers shared back and forth[9] in addition to their use of point of care tools. Individual articles took precedence because they were perceived as rigorous and current and had the potential to shape clinical practice. A psychiatry resident noted that supervisors sharing articles was a common EBP activity:

> And now in residency, I have a supervisor, and so I guess the way that it comes up the most is for example discussing a patient, and they might [say] 'oh this paper came out recently that stated such and such and it's relevant to the patient. Or this review came out, that type of thing.' Yeah. I guess that's the most concrete way.

One psychiatry resident similarly was considering how to incorporate a recent study that was discussed in journal club; the study contradicted previous results by showing a null result for prazosin for nightmares among PTSD patients. The respondent passively gained awareness of a single study via the journal club, a department initiative for residents, and had to decide how to incorporate this new information into practice. The resident took a flexible approach that enabled her to consider the evidence, proceed with the treatment as she had previously intended, while leaving open the opportunity to change the treatment plan if the patient showed no result, consistent with the evidence, in the future if need be:

> I mean, it's one review article, so I had to take that into consideration ... It's like well let's give it a shot, and if it doesn't work, then, and if it works then great. That's kind of how I view it.

In contrast, an attending physician in the Department of Family Medicine (with a Decision-Making implicit model) noted that she rarely read individual articles, though she considered herself qualified to do so, because she did not find them relevant for most practice decisions:

> I had to learn in medical school and also a little bit during residency about how to interpret level of evidence, but I feel pretty comfortable using those resources, I'm not so comfortable with maybe other resources for looking up levels of evidence. I don't typically look up papers myself unless it's something super rare [laughs], then I'm like okay well, there might be a paragraph in Dynamed, but I want to read the paper that it was actually based on, then I'll click on the link that they provide, and look at the actual paper myself.

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[9] To be discussed in more detail in Chapter 6.

4.1.3. EBT-Based

Under an EBT-based model, one mental health administrator expected providers to familiarize themselves with the clinical practice guideline well in advance of the clinical encounter as preparation, and specifically with the specific treatments recommended for each diagnosis. He remarked:

> At the ground level, the provider reviews the CPG [Clinical Practice Guideline], becomes familiar with the recommendations for each diagnosis ... As a provider, I become familiar, for example with treatment of psychosis, an A rating means the treatment is accepted by the governing bodies by discipline.

4.2. Using evidence to stay up to date

Respondents generally saw staying up to date outside the clinical session as an integral part of both Evidence-Based Practice and what it means to be a good provider. Providers considered a wide range of evidence sources, which differed in the issuing organization's role, including professional societies, academic journals, third party reference tools, and individual experts. Resources that respondents used to stay up to date also differed in how definitive the underlying evidence is, how representative of the body of knowledge on the clinical topic, and how relevant it is for clinical decision-making. These included:

- a single research article (representing a single trial that may contrast with prior findings)
- meta-analyses or systematic reviews (representing all existing trials meeting eligibility criteria)
- clinical practice guidelines (representing existing trials and expert opinion on their implications for practice)
- email or blog updates (representing information that the issuing organization or individual chooses to highlight, often including identification of a common clinical problem and summary of recent evidence or guidelines with implications for a change in standard practice)

4.2.1. Individual strategies for staying up to date

As the Internal Medicine attending physician noted above, providers consulted a range of different evidence resources, creating their own approach to staying up to date and sharing information from different sources with one another. However, the types of information each resource provides are very different, ranging from fundamental medical research articles and journals to the updates that professional societies or individuals who are considered experts in EBP (such as Geoff Modest, a practicing family physician with a popular blog on the British Medical Journal EBM website) choose to publish. The attending physician continued:

> So I think it's hard to stay up to date on everything, but I try my best, and different people will make different attempts to stay up to date. Some people will read New England Journal of Medicine every week, some people will sign up for email listservs, I do that, there's email updates, I think I get … A daily update from the American Medical Association of all the new updates every day, and then I also subscribe to this blog, Geoff Modest, who does all the primary care relevant articles, Monday through Friday, so I read those as well. Not every day but in chunks. And whenever there's a question I have, I'm always reading Up To Date dot com as well, still looking up everything.

4.2.2. Department-led strategies for staying up to date

In the Department of Family Medicine, providers still developed their own individual approach to staying up to date, but these approaches were strongly shaped by department-wide teaching about

evidence management strategies, informed by the Information Mastery training the department provided. The Residency Director underscored the clear roles of different types of evidence sources in supporting both active and passive approaches to evidence consultation:

> We talk about hunting and foraging tools. The hunting tools, when you go to look for an answer that you're confident you can find the best answer, and then a foraging tool that when something new comes up in the literature that might change your practice, that that bubbles up on your radar. So using email alerts and stuff from various services that bubble those things to you.

To this end, the department signed residents up for a range of society and third party email lists; residents acknowledged that it was useful but that they did not read all the materials and prioritized those that were in more palatable formats. One intern in Family Medicine joked that "I would love to say that I read all the guidelines all the time … I mean that's just not true," before noting that she regularly received passive evidence updates in email and podcast form. While guidelines are more comprehensive in terms of their evidentiary support and implications for practice decisions, providers readily acknowledged that it was not practical to consult most guidelines regularly.

4.2.3. EBT-Based – Staying current on specific treatments rather than evidence

In mental health, it was less common to read individual articles, especially regarding psychotherapies and especially among respondents with an EBT-based model of EBP. Those with an EBT-Based model view did not talk in great detail about their sources of evidence, they spoke more about specific treatments that were generally considered evidence-based. Individual providers were typically familiar with the set of treatments that were considered evidence-based[10], either through reading the clinical practice guidelines or generally knowing that a particular treatment was considered an EBT, rather than research materials. Rather, because the specific EBTs take significant training to conduct, they must learn and integrate the psychotherapies well in advance of practicing. To them, the use of evidence in practice equated to learning a "tool belt" of psychotherapies that are generally regarded as evidence-based for specific conditions. Therefore the decision to conduct EBP with a certain patient involved both the decision at the point of care, as well as a prior decision to train in the specific EBTs (so the provider chooses treatments they become competent in and then chooses from among those treatments for a specific patient).

One research psychologist with a Decision-Making model believed that even providers supportive of EBP were unlikely to read individual articles, rather that providers were generally familiar via a profession-wide "narrative" that certain treatments were considered evidence-based:

> I think most clinicians do not read these articles. I think most clinicians get the narrative in the air [that specific treatments are evidence-based] and they run with it. And they take it as fact and they don't think about it critically. And especially if it's really coming from the top down, and it's just spread by everyone and everyone's saying the same thing, then you get indoctrinated into it. Sort of a groupthink mentality that develops. No one is like oh on my Saturday night I'm going to pull up all these articles and print them out and read the fine print, no one's doing that, no one ever does that.

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[10] Including, for example, CBT for a range of mental health conditions, Prolonged Exposure, Cognitive Processing Therapy, and Eye Movement Desensitization and Reprocessing (EMDR). However, there were debates about whether certain treatments, such as EMDR, should be considered evidence-based. Many respondents expressed that a specific treatment might not be appropriate in certain cases, even if it were considered an EBT.

This view was supported by a mental health administrator with an EBT-based model, who also agreed that providers are unlikely to regularly consult the literature:

> If I am trying to treat a specific condition … what I would do is look to the literature on empirically supported treatments – I am looking for support from multiple labs – do I like their research. The reality is that a majority of providers don't have the time. Most providers who are not PhD trained, or a PhD in psychology – you might not have the ability to read through all the research and pick what works best. Consider the case of someone who comes in with multiple symptoms – has insomnia in addition to their main condition, what should this non-PhD provider do – right now it's impossible to standardize – we need to work towards a clinical decision support tool that is in the EMR [Electronic Medical Record] itself.

To this respondent, EBP appeared to mean something different for different providers based on their training. Those providers who were PhD-trained and research literate might regularly consult the literature in caring for a particular patient, whereas for other providers, EBP would entail incorporating "decision support" recommendations found in the EMR, with limited recourse to the underlying research.

5. Translating evidence into decisions

Providers differed in how they use evidence in making clinical decisions. Even when providers were keenly aware of evidence-based recommendations for practice, they identified reasons for which they would not apply those recommendations with full fidelity.

Further, in many cases, providers had an imperfect understanding of the evidence for a particular clinical situation, and their decisions to either seek evidence or use their tacit knowledge demonstrated the clinical effects of how EBP is actually used in practice. While many decisions were made by seeking out evidence at the point of care, providers also made decisions based on their general understanding of existing evidence (for example that they gained through staying up to date). The decision of when and how to actively seek evidence is extremely important, as many respondents felt they knew the evidence for the most common clinical questions, and therefore would not actively search for evidence at the point of care on these issues. This process is little understood, but Gabbay and le May's (2004) influential study found that providers collectively develop tacit "mindlines" to make sense of and apply evidence rather than explicitly consulting formal clinical practice guideline resources in practice. The present study supports that finding, and demonstrates some of the processes by which tacit knowledge about guidelines develop. In some cases, the tacit knowledge about common clinical cases that providers considered "evidence-based" was in fact an approximation of the actual guideline.

The clinical effects of how providers conceptualized and used evidence in practice for common clinical questions were exemplified in providers' decisions around colorectal cancer (CRC) screening in the Department of Internal Medicine (Section 5.4). CRC screening is a highly common clinical case, which providers generally consider important to conduct, and providers generally agreed on the evidence for various screening methods. Nevertheless, they exhibited some of these counterintuitive uses of evidence, conflating the evidence-based recommendation with the standard of care and not consulting the evidence directly. When the clinical question was reframed from an individual clinical recommendation to a population quality improvement problem, providers arrived at a different decision, perceiving a salient change in evidence that did not exist.

5.1. Fidelity – how providers use recommendations in clinical decision-making

Across EBP models, respondents had different views of how evidence should be factored into practice (in general, despite the above questions of awareness and access to guidelines). Fidelity refers to the degree of adherence to a particular resource as it is designed. It is typically used in the context of manualized psychotherapies (in which case it refers to the degree of adherence to the practices, treatment plan, and logistics prescribed in manual) and clinical practice guidelines (in which case it refers to the degree of adherence to the treatment modalities and criteria for use recommended in the guidelines). Fidelity is a longstanding question in psychotherapies (Bauman, Stein, and Ireys 1991; Cohen et al. 2008) and in guidelines (Cabana et al. 1999). I show how it is related to respondents' conception of the evidence and providers' roles.

By and large, providers treated evidence-based resources as information to be adopted in light of real world complexity; whereas administrators and researchers emphasized the importance of adherence to either EBTs or guidelines in order not to compromise the empirically demonstrated benefit. Pure providers typically were not concerned with fidelity. Those with a research or administrator role were more concerned with fidelity (though those with a decision-making model or researchers who practiced clinically often advocated isolating the 'active ingredients' of a treatment. They were flexible about applying them or open to deviating if it would not do harm). Chapters 5 and 6 will address in more detail the use of organizational mechanisms to incentivize fidelity.

5.1.1. Provider skepticism

For some, questions of fidelity arose from skepticism about the recommendation, particularly when they associated evidence with specific treatments. For example, a second-year psychiatry resident described EBP in terms of specific research papers, a resource that she could consult to provide indication about the effects of a treatment:

> I mean I can't just decide on one paper, but taking into account and seeing it globally, like this paper said this, and this paper said this, and sort of weighing the [evidence]. That's what it is to me.

In this quote, she implicitly associated EBP with [research] papers, a specific evidence resource, but argued that individual papers are not themselves conclusive. She said she has to "sort of [weigh]" them, suggesting that adherence to the conclusions of any one paper must be weighed against one another and with her skepticism about what the papers suggest.

Others, typically the Decision-Making respondents, treated EBP as one of a number of informational decision-making inputs for providers. In these examples, they found and extracted the "active ingredients" or relevant aspects of evidence-based recommendations and adapted them for their patient. For example, a Family Medicine attending physician remarked that for depression cases, she would never use the recommended starting dose in evidence-based reference materials due to her clinical experience and desire to track a patient's response to changes in dose over time:

> If you only practice Evidence-Based Medicine, it's based on numbers. It's not an exact science on people and the way people's bodies react. The most common starting dose for a SSRI, say, there's a medication out there called Lexapro. The common starting dose for people on Lexapro is between ten and twenty milligrams. I never start people on the starting dose. Especially if they've never taken an SSRI before. Because I don't know how their body's going to react to it. So the evidence says that the starting dose is twenty milligrams, and you'll find that in every single paper, every single app that's out there. I will never start people on that. I will start them at ten milligrams.

Or I'll start them at five milligrams. … So that's where the practice of medicine comes in, and the art of medicine comes in. How do you practice Evidence-Based Medicine and stay along with general guidelines, and where do you steer away, and when do you bend the rules a little bit?

Similarly, one clinical and research psychologist using a Decision-Based model of EBP described her experience learning and applying Motivational Interviewing (MI) as continuing education. She described how she specifically targeted the technique to fill certain gaps in her techniques, to help alleviate ambivalence to engaging in exposure-based therapies. She spent considerable time learning the manual and the many components, trying each, and eventually adapting aspects of it, such that she was only using specific parts in a targeted way:

> … if MI is a hundred percent of all the things I probably only do fifteen percent, and probably not in the way it was originally designed. But I try to take those components in the way that they are originally designed and in the spirit they were designed. But it's not anywhere close to as if I had a client I was doing Motivational Interviewing with and that's what I was doing.

Her Decision-Making approach, particularly with her highly adaptive style of learning the "active ingredients," clearly influenced the treatment decisions she used and her willingness to adapt and apply specific components of a manualized technique, but also represented a significant time investment to learn the technique in a way that fully integrated the causal mechanisms.

5.1.2. Researchers and administrators emphasizing adherence

Others, especially those in administrative or research positions, argued that adherence to guidelines or treatment modalities as designed was important to ensure the benefit of the empirically tested intervention. They were concerned with where the limits to that provider discretion are. As a clinical research psychologist noted:

> I think where it gets tricky is people say they do CBT but they're not [laughs], like when you go in and you actually listen to what people are doing, it's mostly supportive therapy. So, it's still hard, right, you can still say you're doing something without actually doing it.

Another administrator took a more stringent view in favor of strict compliance with the guideline as an algorithm for appropriate treatment choice. As will be discussed further in Chapters 5 and 6, his beliefs as a healthcare professional about the importance of closely adhering to guidelines in conducting EBP were closely coupled to the organization's oversight role through the use of documentation.

> Those are published – a provider, as intended, the provider has details of different treatments and the level of evidence to support – A B C D and I, not adequate information to make a recommendation … As a provider, the intent is that I review and I am competent at the category A treatments, and if I do not do A, that I clearly document why. And there are reasons for these deviations, for example with certain medication, a patient may have a dystonic response to antipsychotics, so you have to do a category B treatment but you have to document it.

One clinical psychology researcher took a stronger view in favor of the Decision-Making model, underscoring the importance of clinical judgment and describing the guideline as a decision aide, a checklist. He argued that in theory guidelines should not be considered algorithmic, but presented a debate in guideline design between those who emphasize fidelity and those who consider it a recommendation:

> Now clinical practice guidelines, doctors really hate cookbooks because it takes all the adventure and the challenge and the fun out of being a doctor. And it ties our hands a little bit. But clinical practice guidelines when I started, when you read the introductions to them, say this is not a cookbook, this is not going to tie your hands. The purpose of what we've created here is so that

clinicians will know all their options and make their best choice based on clinical judgment … So this is an aid to clinical judgment. This is a checklist to make sure that you haven't missed an opportunity that was before you. And if you try to choose between things, then this will give you the available evidence to help in your selection. But it won't make the selection for you. If you read the introduction to clinical guidelines today, there's an arrogance to them. This is what works. In the order in which it works. And sort of explicitly you're free to choose, but implicitly, why would you not choose to do the thing with the highest rating.

5.2. Evidence-based guidelines and the standard of care

Providers recognized the importance of guidelines, but often had a heuristic understanding of them and were not necessarily aware of their source or the details of their recommendations. In some cases, providers appeared to appeal to specific, reputable organizations' guidelines, while in actuality citing generally accepted, collectively developed standards of care. This distinction is particularly salient because the EBP movement was intended in large part to "de-emphasize intuition" that may be embodied in the standard of care in favor of explicit consultation of empirically-based evidence, including guidelines (Evidence-Based Medicine Working Group 1992:2420). Paradoxically, because of the tacit processes of making sense of passively acquired evidence (not at the point of care), particularly in light of the collective "mindlines" sense-making that colleagues conduct, the information that providers collect in this manner may become equivalent to the standard of care.

For example, a psychiatry resident perceived evidence-based guidelines and the standard of care as essentially synonymous. Guidelines were in some sense evidence-based and validated by the professional society, but the resident learned them indirectly in lecture through department faculty and did not feel he had recourse to the actual guideline, much less the underlying evidence. Further, guidelines were something "you pick up on," tacitly through training and colleagues, in a sense they represented the same common knowledge in the profession that a standard of care would, but gained the imprimatur of EBP through indirect reference to underlying evidence:

> Resident: These are guidelines well known in the community, the psych community, also taught to us in our psychopharm lectures. And just in medicine, not just in psychiatry, there's guidelines that you follow [laughs]….And they call it standard of care.
> Interviewer: Okay. And where do those come from, are those from a specific [organization]?
> Resident: That's a great question … [laughs]. I believe so. Yes. I believe so, so what are the organizations called, I'm not sure … But there's the APA… and I don't know exactly how to answer that question because I can't say, okay I'm going to go to the APA to search the specific guideline on prescribing antidepressants. But when you're in the community you kind of, you are taught and you pick up on these guidelines in your training.

Similarly, an internal medicine resident noted that, generally, reputable guidelines existed for a specific condition (in this case, colorectal cancer screening), but for the purposes of everyday clinical practice, he developed a heuristic rule for screening. Notably, in this quote he did not appeal to the specific issuing organization, but to "clinical practice in this country," to support his heuristic:

> You know there's guidelines formulated by some panel of experts who have a gigantic comprehensive body of like primary literature evidence about how fast you know colon cancers grow and all that stuff. I can't tell you all those clinical trials that led them to make that decision. But the, the fifty years old, every ten years for normal risk patients, that's certainly, that's something I know is the clinical practice in this country.

The provider essentially appealed to the standard of care, but couched this argument in the language (e.g., "guidelines," "primary literature") of the EBP movement.

Notably, a number of respondents generally referenced guidelines from the U.S. Preventive Services Task Force (USPSTF), an independent, federal government-appointed body that reviews evidence and generates guidelines for preventive clinical practice in primary care. However, many respondents could not accurately name the organization nor describe its specific role. One respondent discussed the USPSTF guidelines for colorectal cancer screening, but because colorectal cancer screening is considered a clear-cut clinical case, the respondent did not actually consult the guideline directly. However, he still claimed the legitimacy of the USPSTF evidence and guideline development process for the screening practice he had learned, because it had been taught to him as being "evidence-based":

> I think with colorectal cancer screening, I trust that there is evidence, cause with the United States Preventative Task Force [sic], they're pretty good about using evidence-based, I haven't looked into it specifically, but they're pretty, like they use stringent guidelines, and so, I trust that there is but I haven't necessarily looked into it. For that at least.

5.3. Salient changes to practice

However, certain guideline changes were particularly salient; providers remembered these "evidence-based" lessons and changed their future practice accordingly. Many respondents had quasi-canonical examples they could cite when a new guideline recommendation upended the prior, non-evidence-based standard of care, or when a change in guideline recommendation from one version or issuing organization to another led to a change in treatment criteria. For them, the meaning of EBP is as much these realized successes (and the potential for similar benefits in other cases if evidence is followed) as it is the process of making decisions incorporating the evidence.

For example, a Family Medicine attending physician discussed specific guidelines and papers that she had had previous experience with that subsequently affected how she practiced:

> So the American Diabetes Association went through a whole recall several years ago now, I believe I was in the middle of med school back then when they rolled this out, this new outcome data that said that no, based on age we're going to have younger patients between seven and a half percent to eight, and our older patients are going to be under nine percent. Because that leads to better outcomes. So for me, to practice those, you know I would never stray from that. I would never say oh no I need you to be super tightly controlled. Because I know through studying and looking at those papers, that there are adverse outcomes that could come out of it.

Many respondents with this model of EBP talked about single studies that came up and changed practice; in some cases these studies were considered so urgent that guidelines had not yet been updated to take them into account. For example, one medical administrator described EBP as "always changing." He notes:

> [EBP is] making sure everybody has what's currently out there, what's currently working, what people have tried, because Evidence-Based Practice is always changing, right? … So clinical practice lags the evidence by ten years, clinically. That's the historical data out there. Anything in the research world takes ten years to get to the clinical world. … And you think about what has been said to, I think of hormonal therapy for women. Think of what the Evidence-Based Practice said. It said take hormones. And then new meta-analysis, new data comes out, and it says, that was all wrong. So sometimes Evidence-Based Practice that's there turns out to be wrong. [laughs]

These examples helped providers conceptualize the benefit of EBP and likely led them to making clinical decisions consistent with the new practice in the example. However, much like the use of guidelines above, this meaning was tacit and collectively constructed. The example as they recalled it may

have been a simplified version of the actual guideline, and the process for conducting EBP may not generalize to other clinical cases.

5.4. Colorectal cancer screening: the complexities of evidence use in practice

5.4.1. Background

CRC screening is a preventive health procedure that is targeted by the Centers for Medicare and Medicaid Services as a quality metric nationwide, and is also closely tracked by individual providers as a preventive care priority. As one physician noted:

> So I think as a primary care doctor first and foremost it's important that all of my patients get appropriate preventive medicine, which includes colorectal cancer screening.

Within the United States, strong consensus exists among professional society guidelines for colorectal cancer screening. The most recent society guidelines in the United States include the United States Preventive Services Task Force (USPSTF). In terms of screening modality, all current guidelines recommend either a colonoscopy every ten years or an annual stool-based Fecal Immunochemical Test (FIT) or Fecal Occult Blood Test (FOBT) at the strongest level of recommendation, though certain societies also include recommendations at this level for other screening modalities, such as a flexible sigmoidoscopy every five years. In terms of screening timing, all current guidelines recommend the same screening frequency (annual FIT or colonoscopy every ten years) and screening patients until they reach the age of 75. Most guidelines recommend beginning screening at 50 years of age for normal risk patients (American Cancer Society 2018; Bibbins-Domingo et al. 2016; Rex et al. 2017).

In Europe and Canada, however, only the annual stool-based FIT and FOBT tests are recommended at the highest levels; the colonoscopy is weakly recommended (Bénard et al. 2018; Canadian Task Force on Preventive Health Care 2016; European Colorectal Cancer Screening Guidelines Working Group 2013). Similarly, despite consensus in the US today, the first version of the USPSTF guideline for CRC screening in 2002 recommended only the annual FIT (U.S. Preventive Services Task Force 2002); the colonoscopy was included in the 2008 revision (U.S. Preventive Services Task Force 2008).

5.4.2. CRC Screening at the Department of Internal Medicine

Despite providers' beliefs in the importance of colorectal cancer screening, recognition of its evidentiary support for improved long-term health outcomes, and awareness of the availability of multiple modalities to conduct CRC screening, screening rates are frequently lower than they desire. Why does this problem persist?

CRC screening at the Department of Internal Medicine exhibited a number of the practical challenges in applying EBP identified throughout this section. Specifically, providers conflated evidence-based guideline recommendations with the standard of care, because CRC screening was considered a straightforward enough clinical practice that they did not actively consult the guidelines. Further, providers often preferred to provide the "gold standard treatment" for their individual patients, despite being more logistically challenging and equally evidence-based compared to the FIT. However, respondents framed the problem of CRC screening differently in different contexts, leading to different approaches to using the evidence available to them for decision-making and ultimately different care decisions.

When framed as a clinical question in the context of an individual patient at normal risk, respondents viewed CRC screening as a clear-cut clinical decision for which they were familiar with the

existing guidelines. In this context, they often defaulted to referring patients for a colonoscopy, long considered the "gold standard" for CRC screening, which afforded the patient a full ten-year validity and offers the capacity for diagnosis and polypectomy if the screen is positive. Providers also may have recommended a FIT test in this context, though they differed in how actively they recommended this option, and in some cases only pursued this option if the patient was uncomfortable with the colonoscopy option. As a clinical question, providers had simple heuristics for when and how to screen, including the patient factors and logistical reasons they might choose one or the other option.

However, when framed as a Quality Improvement question, providers were less certain and more analytical about potential courses of action. The change in framing and context, from an individual, in-clinic decision—a familiar task—to a population health management problem—a peripheral task and new context within which to evaluate screening options—led providers to consider external evidence, prioritize different aspects of the decision, and ultimately make different care decisions. In this context, providers developed projects that overwhelmingly relied on FIT.

5.4.3. Use of Evidence

5.4.3.1. Perception of CRC Screening as clear-cut:

When they did have the time to conduct CRC screening, providers described it as a relatively standard process. Demonstrating the general acceptance of the colonoscopy as the default, a third year resident described the guideline for colorectal cancer screening in a heuristic fashion, underscoring, how "nicely defined" and easy to remember the guide was:

> Um you know that's [colorectal cancer screening] pretty well-defined, you know there's a lot of good evidence just about that, um and I can't name it off the top of my head, but, but this is one where it's just nicely defined, it's like a nice perfectly round number. It's fifty years old and it should be every ten years unless they've got something else going on and stuff, so.

Notably, he referred to the frequency without qualification as "every ten years," which is the recommended frequency only for colonoscopy (FIT is done every year), demonstrating that the colonoscopy was *de facto* his standard approach.

Because providers perceive CRC screening as a clear-cut case, they do not actively consult the guideline, relying instead on a tacit understanding of the guideline. They were unlikely to consult the guideline because it is considered so common and easy to remember. As an intern remarked:

> Interviewer: Have you looked at UpToDate for colorectal cancer, or?
> Intern: I have in the past before, not recently because now I'm a little bit more familiar, but…because I think it's pretty standard when you start for colorectal…I think for other screening, like they've tried to make it pretty standardized, so at least I know when to at least offer it.

However, as a result they conflate the evidence-based recommendation and the standard of care. This intern discussed the colonoscopy as the default, and in fact it is the only option he discussed. While I asked the question with respect to "colorectal cancer screening" in general, he responded specifically in terms of "colonoscopy." As he remarked:

> First of all with the age. If they're above fifty, and they haven't done like a colonoscopy within ten years, this would get a colonoscopy without further question.

5.4.3.2. FIT de-emphasized as a 'screening for the screening'

The colonoscopy essentially became a default, and even when the FIT was offered, it was presented alongside a colonoscopy recommendation, especially because of the preference for the

definitive and long-validity negative result of the colonoscopy screen. Many providers described FIT as a 'screening for the screening,' presenting the FIT as an alternative to the colonoscopy but ensuring that the patient understands that they would need to undergo a colonoscopy anyway in the case of a positive FIT. This awareness appeared to factor into their decision to conduct the colonoscopy at the onset in most cases. There was a strong perception that because a positive FIT screen requires a diagnostic colonoscopy, that it was preferable to do the colonoscopy screen from the beginning, and benefit from the ten year validity of the screen from the onset. As the third year resident noted:

> And then the other thing is that if it's positive, it basically just detects if there's blood in the bowel movement, and if it's positive, it triggers doing the colonoscopy, so you still ultimately end up in the same place with the same...pain in the ass intervention, or screening.

5.4.3.3. Framing effects

However, when framed as a QI problem, the change of context encouraged providers to consider other evidence and criteria. They were more open to FIT in this context and occasionally consulted evidence because of the change in clinical question, from a common clinical screening case that they felt well-prepared to address with the knowledge they had to a challenging population health intervention design question more peripheral to their core expertise. When they consulted evidence about the latter question it was from research articles describing the effects of QI interventions to improve CRC screening rates and the experiences of peer health systems in order to support a 'business case' for their intervention, rather than the clinical practice guidelines.

However, this initiative was perceived as a temporary departmental effort to alleviate the backlog, and not a permanent change, even though the FIT kits remained available in the consultation rooms. Despite its equivalence from an evidence standpoint, and sustained departmental support via FIT kit availability, the FIT was perceived more as a response to logistical challenges as opposed to a first-line screening approach in its own right.

In the context of individual patients, the attending physician supervising the effort initially said:

> I try to introduce colonoscopy if they're relatively young, because then it buys them 10 years of like not worrying potentially, because you get credit for 10 years, right?... But if there's any push back for a colonoscopy … I'm like okay let's do the FIT. And usually patients are like oh yeah there's an alternative? Alright that sounds good. But I also have to counsel them that if that FIT test is positive, we're going to do a colonoscopy [laughs]. Because if the FIT test is positive, are you willing to still get the colonoscopy? If they decline, I'm like that's fine, then you just have to know the risks and benefits.

With individual patients, the colonoscopy was considered preferable, especially in order to gain the "credit for ten years."

However, in the context of the QI projects, six months after we first spoke, the attending physician increasingly preferred the FIT as a default:

> And so we're trying to push more FIT tests for people who are average risk because we can get them back more quickly, and colonoscopy there are just more barriers …I think what we're going to say to providers … is that the first thing that we'll probably do in terms of quality is get them FIT tests, and if the provider and patient strongly want to do a colonoscopy they can just toss the FIT test and do a colonoscopy instead. And that's fine. So it's not like we're going to say don't do those things, but you know there's a reason why the people who are overdue are overdue. They may have already tried to do colonoscopy in the past but didn't get to it.

By contrast, in the context of the population, "in terms of quality," the FIT was preferable to reduce barriers to care. This experience having explicitly considered the benefits from the FIT may also have affected her future clinical practice from the individual perspective. She described her increased consideration of the question and consultation of the literature as a result of her involvement in the QI initiative.

> I don't know the history of guidelines very much, but I imagine it was driven by, there might have been better evidence earlier for colonoscopies, I don't quite know the history of it super well. And the thing is like, *it's only more recently that we have data to say that annual FIT is just as good as colonoscopy for patients who are average risk*. And so I think it took a while for us to get data. And it's also harder to change people's practices when you know it used to be that colonoscopies were so standard. … But I think there's still a bias among physicians to prefer colonoscopy over FIT test. I think some of my work in terms of the knowledge is if the patient is having a hard time completing--or getting to a colonoscopy, I think instead of waiting forever and waiting for something that won't happen, at least do a FIT test now, while you work on getting them to a colonoscopy. Because it's a [much] harder thing to coordinate. And the uptake of FIT test is, patients like it better too. So I think all in all, it's probably several different things. There's probably historical recommendations if we look at, I'm not sure what the history of guidelines is, *but I'm pretty sure FIT test wasn't in existence when I first studied this like in medical school even*. (emphasis added)

She described her belief that the FIT test has gained supporting evidence and a change in recommendation in recent years (since her medical schooling). But in fact, as described above, the FIT has been recommended at the highest levels for screening since the development of the first USPSTF guidelines for CRC screening in 2002. The recent change in the literature is instead that the FIT has been a target of a number of recent quality improvement interventions that have been published in academic literature in recent years. The perception of the FIT as only recently introduced into the guideline results from the confusion between the recommendations from evidence-based clinical practice guidelines and the status of the colonoscopy as a generally accepted standard of care among providers.

Providers considered FIT more seriously when organizational initiatives or a reframing of the question lead them to actively reconsider their relative benefits, including by reading research literature, local patient data, and guideline recommendations in more detail, in order to create a 'business case' for a QI initiative. Residents were then asked, with their own patient data in hand, to evaluate barriers to screening among their population.

The different framing of the problem, from individual care to improving population outcomes, led the same providers to consider different information and different solutions. As a population-level QI intervention, provider groups mostly proposed interventions centered on the FIT test; the three proposals included: sending a reminder by mail immediately after providing a FIT kit, phone outreach with a general CRC screening reminder (without modality), and generally using more FIT rather than colonoscopy.

The problem was the same – getting individual patients a CRC screen (indeed each resident chooses an intervention for their own panel, so they were quite literally the same patients). However, in the context of an individual patient visit, providers tried to optimize benefit to the individual (e.g., "gold standard" care, "buying ten years"). In the context of population health management, they tried to optimize benefit to the population (e.g., minimal cost, minimal barriers, as many patients up to date as possible). In some sense, reconsidering the clinical evidence and adapting clinical decisions accordingly in a different clinical context and question was well in line with the model of EBP. However, it highlighted the tacit knowledge that individual clinical decisions are based on in what are considered settled, well-known areas of health. The reframing from a familiar question to a new question may be a strategy going

forward for overcoming this potential barrier to evidence use and conflation of guidelines and standard of care, by encouraging providers to think more critically rather than heuristically about those decisions (Kahneman 2011).

For certain providers less familiar with the details of the guideline, the emphasis on resources, guidelines in particular, and encouragement to have them memorized for common practice led to a heuristic, 'mindlines' approach to guideline use in clinic. However, when CRC screening was framed as a QI project, providers used different processes to arrive at a course of action, consulting different resources (panel data; provider, patient, and system factors; QI research literature) to demonstrate impact in a credible way. Providers would not consult individual research articles or guidelines for CRC screening methods because CRC screening was a common clinical question they were expected to know and not necessarily support with evidence.

6. <u>Discussion</u>

I demonstrate that despite its coherent definition in theory, health systems stakeholders attributed a broad range of meanings and activities to the concept of Evidence-Based Practice. I document variation in how evidence was used in clinical practice, and attribute this variation to differences in beliefs about what constitutes evidence, and what information respondents believed providers should take into consideration in making clinical decisions. These findings demonstrate the magnitude and complexity of decisions individual providers must make in the context of conducting EBP in practice and the wide variety in resources and training available to them in doing so. They also underscore the significant gap between how EBP is taught by medical schools and professional societies, and organizations on the one hand, and what providers need to know to put it into practice.

I find that stakeholders selectively emphasized certain aspects of the concept of Evidence-Based Practice over others, and that these responses cluster into three of what I call *Implicit Models of EBP:* Decision-Making EBP, Resource-Based EBP, and EBT-based EBP, based on which aspect of the EBP concept the respondent emphasizes. Though developed inductively, I find that these models correspond to the *processes*, *inputs*, and *outputs,* respectively, of EBP decisions in theory. I use the term "Implicit Models" because, first, each form takes the general concept of EBP and reduces it to a version, or "model" that can be put into practice. Like all models, they represent the concept imperfectly; each model leaves something out, but they all represent a piece of the general concept. Second, stakeholders' models are "implicit" because they typically do not explicitly recognize that they emphasize only a piece of the general concept over the others. I find that respondents' implicit models are often a product of their original training in EBP or norms in their profession, such that many respondents may not have been exposed to a broader view of the concept.

While the theoretical definition of EBP encompasses the decision-making process and includes clinician expertise[11], most respondents were unaware of this theory. I find that most respondents highlighted certain aspects that they understood to be important to EBP as synonymous with the concept itself. They perceived gaps in which their idea of EBP did not apply to the complexities of real-world practice (such as the psychiatry resident who "can't decide on one paper"), or 'overapplied' their idea of

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[11] This broad theoretical definition is in part due to the definition's expansion over time in response to criticism. The deviation in practice may be due to the impracticality of the theoretical definition, which developers acknowledge is not implementable in its broadest form (Haynes et al. 2002a).

EBP in an effort to be rigorous (such as the use of individual research articles rather than guidelines or reviews supported by broader and more established science), to occasionally paradoxical results.

In theory, stakeholders should be aware of and endorse *all* models of EBP, because each implicit model is a lens on the concept of EBP. So respondents who endorse multiple models, particularly those who can speak with nuance about them, are closer to the theoretical model of EBP. Further, that an organization's stakeholders endorse a range of EBP models may not be adverse, if they are sufficiently knowledgeable about EBP and able to exchange views (and potentially if there is not a power imbalance with a predominant EBP model at the top, especially if it deemphasizes provider autonomy, and another at the bottom). The organization indeed may benefit from having stakeholders who emphasize each of the process, inputs, and outputs of clinical decision-making, particularly if organizational initiatives exist to reconcile these potentially competing views (Chapter 5).

Whereas empirical research has often focused on poor provider skills (e.g., in scientific article comprehension or literature search) or provider sentiment against EBP as barriers to EBP use (Aarons 2004; Borntrager et al. 2015; e.g., Melnyk et al. 2004; Zwolsman et al. 2013), my research suggests that broad differences in what it means to conduct EBP contribute to the unexpected uses of EBP observed in practice described below. That is, it is not that critics of EBP "misconceive" the concept, but rather that different aspects of the concept—the inputs, outputs, or processes of decision-making—are salient to different stakeholders, even those highly sophisticated in EBP. They have difficulty communicating about EBP as a result–critics as well as proponents; novices as well as experts in EBP.

After organizing individual respondents by the meanings they attribute to EBP, I find that respondent groups tended to cluster together—with notable individual exceptions—lending support to the idea that approaches to EBP are collectively developed at the practice group, organization, and specialty levels. This result complements Gabbay and le May's (2004) finding that groups of practitioners develop "mindlines," collectively developed heuristic versions of specific clinical practice guidelines; my result shows that groups similarly develop heuristic approaches to EBP writ large along specific aspects of the concept as well. This process may occur at the practice group or organization level, particularly in organization where EBP is considered a priority or is the subject of targeted organizational initiatives, as in the Department of Family Medicine, or at the specialty level, in which case providers with similar backgrounds adopt similar approaches to EBP based on how it was presented in their professional training, like in the Department of Internal Medicine.

This tacit understanding of EBP led to the counterintuitive result that respondents occasionally conflated evidence-based guidelines and the standard of care (e.g., in the CRC screening case). This understanding resulted in stakeholders using the language of EBP to describe the standard of care—the very practice that EBP was intended to call into question.

Providers commonly referred to canonical examples of studies that produced a "groundbreaking," clinically important result against the standard of care. These salient examples both became the clinical cases that providers were most attuned to applying EBP in, and they also shaped the meaning of EBP for providers in terms of the clinical successes achieved by empirically tested results over an inferior standard of care.

Paradoxically, I find that enthusiasm for individual studies, journal articles and RCTs as rigorous, current evidence occasionally led providers to apply those resources—representing uncertain science and a single clinical trial—in practice over more established systematic reviews and guidelines with a broader evidence base. Medical education in EBP emphasizes the importance of rigorous, valid research to establish causal clinical claims (e.g., RCTs) and the skills necessary to read and evaluate those studies— that is, the inputs of EBP decisions. However, providers often do not receive the training necessary to

integrate this general understanding about the value of certain resources into conclusions for applying them to clinical practice. As a result, for many providers it is unclear when to follow the standard of care, an evidence-based guideline that may not incorporate the latest studies, or an exciting new result that is rigorous yet counterintuitive.

Despite a wealth of models for evidence-based decision-making in the literature, the varied ways in which providers consult and apply evidence resources in clinical settings suggest a significant theory-practice gap.

Chapter 5 - EBP Activities at the Organization Level: Standardization and Discretion

1. Introduction

Evidence-Based Medicine was developed in the early 1990s as a "new paradigm for medical practice," prescribing that individual physicians systematically consult validated, research-based evidence as a means to improve clinical practice (Evidence-Based Medicine Working Group 1992). Specifically, the concept was defined as "the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of *individual* patients [emphasis added]" (Sackett et al. 1996). As described in Chapter 2, in the nearly three decades since its conception to guide individual-level clinical practice, the "evidence-based" paradigm has encompassed a diverse range of concepts and activities at *all levels* of the health system.

Today, Evidence-Based Practice (EBP) is a stated priority for many healthcare organizations. However, despite extensive research into how to disseminate and implement EBP interventions once selected and designed, little is known about what EBP means as an organizational intervention, that is, how and why organizations develop and use EBP interventions. What activities are conducted in the name of EBP at the organization level? How do these organization-level activities relate to individual use of EBP?

These questions are non-trivial because of the different roles individuals and organizations play, and the design of EBP, in theory, as an individual strategy for staying up to date on clinical evidence and making informed clinical decisions. But EBP at the organizational level takes on an inherently different meaning, because of the organization's intrinsic role in negotiating different individual normative priorities. While EBP is in theory an individual-level method of staying informed as a professional and applying that information, at the organization level it is inherently a statement about organizational standardization, i.e., the role of the organization in determining what individual providers should do and how, and therefore it is intrinsically normative and prescriptive. Organizational EBP use therefore highlights the tension under EBP between clinical practice standardization around 'what works' and the individual decision-making that is emphasized in the theoretical models of EBP. Further, to date there has been little theoretical work on the organizational role in conducting EBP; at this stage there are no descriptive nor prescriptive theoretical statements about what organizations do in the name of EBP. Instead, research on organizational uses of EBP have focused on how organizations can or should implement chosen Evidence-Based interventions once selected, including how organizational climate and leadership affects their implementation. Similarly, while certain organizations have provided statements about what EBP is and how it should be conducted, notably professional societies (e.g., American Academy of Family Physicians 2015; APA Presidential Task Force on Evidence-Based Practice 2006; Dawes et al. 2005) and medical journals (Davidoff et al. 1995), these have not been theoretical but rather normative position statements from stakeholder organizations. Further, these statements predominantly address the individual's role, rather than the organization's, in conducting EBP.

This chapter describes how and why organizations use EBP in clinical practice. I first describe the wide range of activities and implementation mechanisms that organizations use in the name of EBP. I then describe the motivations that administrators have for organizational intervention in EBP. Finally, I describe

how some organizations used organizational control mechanisms at their disposal to nudge[12] providers toward EBP use.

I find that organizations used a wide range of both EBP activities and implementation mechanisms. Most organizations conducted many EBP activities at a time, involving personnel, structural, and/or policy changes, suggesting that EBP interventions are typically far more extensive than the implementation of a single clinical innovation, the scope that existing implementation models typically address. Most organizational interventions observed in this study focused on disseminating resources (decision-making inputs) and enabling the use of specific EBTs (decision-making outputs). One organization, the Department of Family Medicine, focused primarily on building provider skills directly in the process of EBP decision-making.

Organizations used EBP interventions to both enable individual EBP, for example by disseminating resources that individual providers use in conducting EBP, as well as to achieve organizational clinical ends, such as creating the capacity for specific EBTs that the organization wishes to offer patients. These ends were frequently viewed as coherent. For example, administrators frequently used resource provision to narrow the scope of what resources and decisions providers use in conducting EBP (facilitating individual decision-making), using defaults or nudges to guide provider behavior toward a local standard (an organizational goal) without formal regulation. However, administrators were sensitive to the potential for individual and organizational uses of EBP to compete if providers disagree with the interpretation of evidence, the relevance of the evidence the organization provides, or if the intervention is too heavy-handed in standardization. The focus on disseminating specific resources (decision-making inputs) and using specific EBTs (decision-making outputs) created a direct stake for the organization administrators in the previously individual-level process of EBP, in which administrators also evaluated, selected, and disseminated specific evidence artifacts at the organization-level.

Administrators occasionally used organizational control mechanisms to affect provider decision-making under EBP; as an organizational intervention, EBP at the organization level was not merely an information process, in which the organization disseminated and providers took up self-evident research evidence,. Rather it acted as a mix of dissemination mechanisms (to inform provider practice) and control mechanisms (to incentivize providers to change practice to align with the organizational standard). In particular, measurement of patient outcomes and provider treatment choices played a significant role in many administrator respondents' views of EBP and plays out in their expectations of how providers should carry out EBP and support deviations from the standard. As a result, measurement played a role not only in EBP as part of the provider's individual, independent management of patients, but also as an organizational mechanism to nudge providers toward EBP use and disincentivize practice variation.

This chapter presents respondents' perspective of organizational interventions regarding EBP. Due to the focus on the organizational activities constituting EBP and their design and implementation, this chapter relies primarily on administrators' responses; the unit of analysis is the organizational EBP activity and the unit of measurement is the individual respondent. I use administrator responses about individual EBP to the extent that it reflects on their design or framing of organizational interventions.

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[12] As defined by Thaler and Sunstein (2009:6), a nudge "is any aspect of the choice architecture that alters people's behavior in a predictable way without forbidding any options or significantly changing their economic incentives," so long as it is cheap and easy to avoid.

2. <u>What Organizational Activities Constitute EBP?</u>

Respondents discussed a wide range of activities that their organizations conducted under the banner of EBP. In most cases, these single activities were part of broader organizational interventions designed to encourage or enable individual providers to conduct EBP.

EBP activities initiated at the organization level that respondents identified included:

- Evidence resource dissemination and educational programs, including providing access to journal articles, conference attendance, third-party information tools, and conducting journal clubs
- Implementation or preferred use of specific EBTs or clinical interventions (or de-implementation of treatments demonstrated to have adverse effects greater than their benefit)
- Dissemination of Clinical Practice Guidelines, developed either by a national society or in-house[13]
- Training or encouraging providers to use "evidence-based" clinical decision-making models
- The conduct of clinical or health systems research in-house

These activities were not mutually exclusive, and many of the above activities incorporate others. For example, "evidence-based" clinical decision-making requires familiarity with specific EBTs, Clinical Practice Guidelines, and the state of current external evidence. However, respondents' organizations differed considerably in the mix of activities they used and the reasons respondents expressed for doing so. Organizations also varied in how they used each activity and what role those activities played within the organization-provider relationship.

Similarly, most organizations studied here instituted multiple EBP activities concurrently. In many cases, these broader organizational interventions were coordinated; administrators designed multiple EBP activities to reinforce each other. For example, the Department of Family Medicine instituted a training program for residents in Information Mastery, a clinical information management and decision-making model designed to help residents identify and apply evidence efficiently and appropriately. They also implemented evidence resources, including third-party decision support tools, and held meetings to disseminate and discuss important guideline updates. In other cases, organizations used multiple activities to achieve separate, uncoordinated interventions, that nevertheless jointly sustain EBP use at the site. For example, in the Department of Psychiatry, a policy to de-implement benzodiazepine prescription in the Outpatient Clinic was undertaken independently of other departmental training initiatives in CBT. These examples demonstrated the breadth of activity used to support EBP use in general at an organization, though they may be targeted at different provider groups or clinical situations. Given the size and complexity of most healthcare organizations, even at the department level, it is unsurprising that many EBP activities may be undertaken independently at the same time and may improve implementation outcomes by targeting interventions at those providers most likely to benefit from them.

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[13] Guidelines are especially comprehensive tools because they may be seen as both an informational resource and an algorithmic prescription of decision-making processes and output. Guidelines are listed separately from other educational resources here because for providers, they indicate the implications of the research literature for practice (i.e., interpreting which treatments should be used in which cases and why), and because organizations use them differently from other resources (i.e., as prescriptive guidance rather than as pure information resources).

2.1. Resource Dissemination – Providing Decision-Support and Continuing Education

One of the most common EBP activities that healthcare organizations undertake is to disseminate general clinical information resources and provide for clinicians' continuing education. Many medical respondents discussed the access they received to UpToDate or Dynamed, two third-party clinical reference tools, through their medical school or current department. Non-medically trained mental health professionals did not discuss the use of these tools, though they did mention consulting academic articles directly.

Those who practiced at academic medical centers discussed weekly grand rounds, and one respondent at the Department of Family Medicine mentioned special meetings to update providers on important changes in national society guidelines. One attending physician in the Department of Internal Medicine discussed her department's financial support for conference attendance, which she viewed as an important way of staying up to date. Sites regularly provided access to external resources and information sources as a way of maintaining providers' currency and, in many cases, enabling them to fulfill continuing education requirements for licensure. An attending physician in the Department of Internal Medicine recently undertook a quality improvement intervention to integrate UpToDate into the EHR system in order to make it even more accessible, demonstrating the importance of the tool within the clinical workflow and the organization's role in sustaining access.

These initiatives were aimed at providing decision support to providers, either directly at the point of care or in the form of updates on changes in the literature that the organization deemed important for providers. They also helped providers fulfill continuing education requirements for licensure.

2.2. Specific EBTs – Providing Clinician Training and Ensuring Patient Access to Treatments

Similarly, organizations frequently invested in training providers in specific EBTs with demonstrated effectiveness, especially in mental health. Mental health EBTs require a significant time and resource investment to train in, and mental health organizations often selected desired EBTs and undertook this investment on behalf of providers in order to broaden individual providers' repertoires and ensure access to the specific EBT service at the organization. More recently, many providers learned the most common EBTs in their academic programs. However, even today, curricula for these programs are highly variable and may incorporate different EBTs to differing degrees. As one respondent, a PhD-trained clinical psychology researcher remarked:

> You know I didn't go to grad school that long ago, so sort of my generation and the generations after me, like we're definitely fed the Kool Aid [about EBTs] in a very heavy way, depending on which grad program you go to. Like for example here in New York, grad programs were very dynamically oriented, like psychodynamically oriented, and so they wouldn't jump on that bandwagon.

As a result of this variation in providers' past experience, organizations needed to train providers in-house in order to establish the individual and organizational capability to offer EBTs. However, EBT training typically represented a significant organizational investment. To administrators, EBTs were challenging to implement not only because of the time and financial cost of the initial training, but because of the subsequent challenge of developing sufficient provider interest, competence and confidence with the new technique to fully integrate it in clinical practice. As a mental health administrator with the Multi-State Network remarked:

[Our organization] requires all providers be trained in the big 3 EBTs for PTSD. … The thing is providers need to believe in the treatment to use it. Once you get "it" as a provider, you can churn and burn faster in terms of following an EBT. If we hire providers and don't give them training time or time to learn – they don't have time to learn on the job. Training and consultation have to be built into their schedule to help them learn. … When you are a provider, it almost too late. You either learn as a student or it has to be spoon-fed to you on the job. You are not going to learn new stuff till your leadership makes you and facilitates the time needed to master the skill.

2.3. Research – A strategic tool to create organizational capability and resources for EBP

Some organizations used research as a strategic tool to establish expertise in specific clinical issues or treatments, to help train other providers, and to sustain a culture of EBP. In two departments in particular, the Department of Family Medicine and the Department of Psychiatry, departmental research was viewed specifically as a component of the organization's EBP strategy.

The Department of Family Medicine had a longstanding research program in EBP clinical decision-making, due to a faculty member's expertise and research. This research program and these approaches to clinical practice were viewed as central to the department's identity and a major component of how residents learn to practice medicine. One resident joked that the faculty member's "official title" was "Guru of Evidence-Based Medicine," and noted that his expertise in this area permeated the department and affected how they approached practice. In this department, training informed by research at the site directly shaped how other providers approached clinical decision-making.

The Department of Psychiatry actively built up its research program in specific EBTs and EBT implementation under the new chief. Within the department, the research initiative was explicitly intended to inform clinical practice. As the Research Director noted:

I actually think it's very important to have a department that's really heavy in kind of clinical and research, right? Because if I think you have a department that's heavy clinical, you miss out on that opportunity to integrate the science into your everyday clinical practice. If we are, if our department is exposed to researchers, and clinicians, and teachers at all times, it should just translate back into practice, on a regular basis.

In keeping with this perspective, the department quickly hired psychologists with training and a clinical focus in EBTs, specifically Cognitive Behavioral Therapy (CBT). The researchers regularly interacted with other providers in the department and maintained formal and informal teaching roles to develop provider capability in CBT.

At the micro-level, individual providers were also encouraged to become involved in research. The department observed an increase in residency applicants' research experience, which became an indicator to them of increasing applicant quality. Upon arrival, the Residency Director would direct new residents to the Research Director and other research faculty based on residents' project ideas or interest in "dibbling and dabbling" around a particular issue. Resident Quality Improvement projects also frequently provided an entrée into the research infrastructure, as the Research Director encouraged residents to build out the project and try to publish.

Whereas the Department of Family Medicine predominantly conducted research on the use of EBP in clinical decision-making, the Department of Psychiatry research program informed clinical decision-making in two ways. First, it provided the support necessary to train providers in the specific EBTs they would need in clinic. Second, the department directly incorporated key members into the research program, expanding those providers' comfort with the research literature and scientific problem solving.

This process indirectly augmented their clinical decision-making capacity, as compared with the Family Medicine department where the clinical decision-making process was explicitly taught.

2.4. Guidelines—Decision Support and an Organizational Standard of Care

Clinical Practice Guidelines are an important mechanism for disseminating EBP. Often developed at the national level by government bodies or professional societies, some organizations also developed their own guideline locally in order to tailor national recommendations to local needs.

Respondents discussed guidelines in two ways. First, they used guidelines as an informational decision aid for providers, i.e., an input to EBP decision-making. Second, they used guidelines as algorithms that prescribed organizational standards that providers should consider as a default, i.e., an organizational standard for output of EBP decision-making.

For example, the University Medical Center Medical Director described how various provider groups used different guidelines as an information source, but that the organization also had an interest in setting internal standards among different stakeholders:

> So let's just take mammography, or breast cancer screening. So we don't have a way, some people order it, and it depends on the individual clinician, who they want to listen to. The OB/GYNs are probably likely to go with what the American Congress of OB/GYNs says. The primary care, if you're family practice you go with AAFP. Some people might go with what US Preventative Task Force says. Some people are like oh no I believe the American Cancer--so let's just say I have a dozen clinicians, and I could have twenty five percent of them picking each one of them. What we should do as an organization is say okay we're going to look at those four things, OB/GYN, AAFP, American Cancer Society and USPTF. Let's look at those four things, see where they're different, and then say which one of these would make the most sense on the balance for our entire population of people we have here that we serve. Pick one, ask people to stick with it, and if they're not going to stick with it they have to document why they're not sticking with it.

3. How Do Organizations Implement EBP Activities?

Implementation models detail characteristics of the implementation setting and process that facilitate successful implementation (e.g., Aarons et al. 2011; Damschroder et al. 2009; Kitson et al. 1998), as well as factors perceived by stakeholders to affect implementation outcomes (Aarons et al. 2009). These factors include characteristics of the implementation object (including the degree of supporting evidence), innovation adopters, end users, context, and implementation strategy (Nilsen 2015).

Respondents identified a number of strategies their organizations use to implement their EBP interventions. These methods include:

- Resource dissemination
- In-house training and resident education
- Championing and internal communication
- Use of collegial relations, EBP-related events or groups (e.g., journal clubs, grand rounds)
- Hiring for specific skills
- Local Guideline development
- Formal Policy
- Structural changes

The relationships between EBP activity and the implementation methods used are presented in Table 5.1.

These strategies align with many of the implementation facilitators identified in the implementation models cited above. Certain respondents involved in EBP implementation indeed are familiar with formal implementation best practices and frameworks, especially those practices developed by the Institute for Healthcare Improvement (IHI). The respondents most familiar with the implementation literature are typically those in dedicated Quality Improvement roles. However, some respondents do not appear to have specific expertise in implementation and design implementation strategies *ad hoc*.

In contrast with traditional implementation models, which prescribe practices to facilitate implementation and clinical use of specific innovations, I found that many of the organizations in this study used a broad portfolio of EBP activities and implementation mechanisms to establish the conditions for EBP as an individual pursuit (Table 5.1). Certainly, in some cases administrators implemented one-off innovations, for example to encourage the use of a specific EBT. But in contrast, the administrators I interviewed often more generally discussed how to create the conditions for EBP at their organization over the long-term as described in the sections below. All administrator respondents broadly acknowledged the need for considerable clinician discretion in using EBP and any specific EBP innovations, and providing the resources, structure, training, or personnel—bigger questions than the implementation of a specific evidence-based tool—to enable individual providers as professionals to make evidence-based decisions. However, they differed in terms of the aspects of EBP decision-making they believed merited discretion and the ways in which they designed programs to achieve the balance with standardization.

3.1. The Implementation Process

Regardless of their implementation expertise, administrators experienced implementation as a multi-stage process, and respondents readily expected not to succeed at first. Further, despite having a plan for the standards or tools they wanted to implement, often informed by their own prior experience as clinicians, many administrators underscored the importance of consulting front-line providers during the implementation process and adapting the program accordingly.

Four respondents discussed implementation challenges as part of an iterative implementing and learning process drawn from quality improvement models that they were familiar with– they framed unexpected implementation outcomes as part of "PDSAs." The PDSA, or Plan-Do-Study-Act cycle, is a framework for quality control and process improvement originally developed by Deming (Moen 2009) and heavily integrated into IHI's approach to healthcare quality improvement (Institute for Healthcare Improvement 2019). These respondents tended to strongly endorse consulting frontline staff early and often, both in the initial design of the EBP intervention and in adapting the intervention and implementation strategy as part of a PDSA cycle. For example, a member of the strategic improvement team at an academic medical center stated:

> You know the triad in the unit-based initiative that I spoke about is nursing, doctors and myself, but they're not necessarily the ones that are actually doing the work so we can you know have ideas of what might work, but it's not until the front line sees it that we'll get if it really does work or not. So that's, I feel like that's been one of the biggest things here.

Administrative respondents unfamiliar with implementation frameworks also believed implementation interventions may not succeed at first, and may be open to adapting the intervention following input from frontline workers. This position derived more from their tacit management style rather than explicit reference to implementation techniques. For example, one respondent, an outpatient

psychiatry clinic chief, wanted to establish a formal policy on benzodiazepine prescribing. He wrote and disseminated a draft policy statement based on a search of existing policies in other institutions and encountered pushback from providers who found the proposed policy too constraining. He then took their feedback into consideration and revised the policy in light of their input because he believed it was important to take "interested parties'" beliefs into perspective. He therefore underwent a similar iterative implementation process, but this approach was driven more by his desired management style and an initial trial and error process than a thorough reading of the implementation literature. As he explained:

> [I] wrote up something that I thought would be reasonable for our clinic. And my initial approach didn't get a lot of enthusiasm from the prescribers, and so I put together a working group and have talked together with a group of four or five people. Of the prescribers. And have come up with something that I think we all feel pretty good about. So it was important for me to make sure that we had reasonable buy in. From the interested parties.

3.2. Training

One of the principal ways the organizations in this study implemented EBP activities was through training. As this study predominantly features academic medical centers, resident training was a core departmental activity, not only to train residents specifically, but also to indirectly shape attending physicians' approach to EBP.

Attending physicians were acutely aware of the responsibilities to ensure that what they taught as faculty and approved in clinical practice as preceptors is evidence-based. Indeed, teaching residents as a young attending physician was what inspired the Family Medicine faculty expert in EBP to begin learning about the approach, as he realized that he consistently needed to update his didactic teaching plans year after year as the evidence changed.

From an organizational perspective, the department expected that the faculty member maintained the evidence base for their didactics — there was limited perceived need to oversee faculty didactics and the department deferred to faculty members' individual approaches to staying up to date, as a residency administrator noted:

> You always think in residency, I don't know if it's naive or not, well people are teaching you the evidence. And when you have didactics or when you're talking to your attendings in clinical encounters. Because you usually are quoting some article or their Powerpoints, they're always referring to the source of the information that they're giving.

While the Department of Psychiatry trained providers in specific EBTs, the curriculum did not feature training in EBP writ large; this training at the Department of Family Medicine appeared unique among these respondents. The curriculum did feature extensive training in Quality Improvement, including specific projects initiated by the residents. The Quality Improvement training overlapped to a certain degree with EBP training, as residents learned a decision-making model for forming a problem statement, seeking evidence (e.g., to make a business case), and devising and adapting an intervention plan, but this process in site-level QI was not necessarily transferrable to clinical EBP.

The Residency Director noted that hiring initiatives also supported resident training initiatives because of the increased capacity and expertise.

> A big thing is we just have a lot more faculty than we did then, so obviously then there's more opportunity for more faculty who have expertise in different areas who can then present and provide lectures around that, and then also supervise residents every [year]. And so that's just an opportunity to have someone else that is in that pool that has expertise in certain areas.

In terms of training established providers, organizations had to strike a balance between ensuring that providers with heterogeneous backgrounds come up to speed on all the foundational treatments, but in a way that is effective and integrated into care, i.e., not something they would just "stick on [a] bookshelf." As the Research Director remarked:

> But we have some really, really solid data out there of what works. And it's horrifying to me that not everyone is trained or uses these. ... I was involved in a study [at another institution] looking to train social workers ... on Evidence-Based Treatments around trauma … Really what I learned from that data is this idea of the shelf effect, where it's like there's too many trainings, too many modalities, and yeah, you're going to train us, and then we're going to just put it and stick it on our bookshelf. And it doesn't become integrated into practice, and I felt, again as a non-clinician, that where did we go wrong? How were you not trained in school? Like you should be coming to the clinic already exposed to all the different modalities, the different types of patients and the tweaks that you would need to make as a therapist, how does that not happen?

Administrators considered training a part of a long-term clinical strategy, particularly when conducted in the form of ongoing training of residents. Further, programs that are able to conduct the training in house also benefit from the secondary effects that training has on keeping the trainers up to date. Administrators were also not necessarily training specifically to disseminate the treatment at hand, but to maintain an atmosphere of continued education and maintaining providers' comfort in applying multiple modalities, in order to be as open as possible to applying the best treatment for each patient. As such, training provided the conditions for EBP—i.e., maintaining a broad range of provider skill and openness to multiple approaches—though they typically targeted single EBT.

3.3. Championing

Respondents commonly believed that individual 'champions' were important to the success of implementation programs, mirroring findings and wording from theoretical implementation and QI frameworks (e.g., Agency for Healthcare Research and Quality 2013; Damschroder et al. 2009).

But respondents differed slightly on the roles they attributed to champions, who should be a champion and what relationship they have to the administration and other providers, and how closely they should interact and adapt the innovation in light of their colleagues' views, i.e., to establish consensus.

The Outpatient Clinic Chief in the Department of Psychiatry tried to implement a policy limiting benzodiazepine use, but needed to revise the policy after disagreement from providers who thought it was too strict for their existing patients. He noted his belief in the importance of champions to support the policy, but in this case appeared to refer primarily to himself as clinic chief.

> So you know I think it was important for me to make sure that we had reasonable buy in. From the interested parties … And make sure we get buy in from everybody. And make it formally a policy. And then try to do a lot of education and promotion of it. And I think that my presumption is that change doesn't happen here, maybe anywhere, unless somebody champions it. And sticks with it, and perseveres.

In this case, use of the term "championing" represented the chief's showing support and successfully communicating the policy and its intent to providers.

The Regional Network Chief Quality Officer takes a similar but stronger position, underscoring the significance he believed the evidence should have for stakeholders, especially from the top down. In his view, showing the evidence to stakeholders should be convincing enough to encourage them not only to change, but also to "own that process."

I mean the fundamental principle is, you know, find some stakeholders and show them the evidence, and convince them to change. And at some point they have to own that process.

From the bottom up, departments in academic medical centers also described using residents to champion EBP interventions, often through their QI requirements. In doing so, they gain the benefit of the dedicated time residents have for QI, they train them in QI at the same time, and they gain the residents' frequent enthusiasm for the issues they are addressing. Residents also are closest to their QI training, and therefore are well qualified technically to lead the initiative. However, residents have significant other demands on their time, and are poorly positioned to sustain the intervention after their QI rotation is over and certainly after they leave the organization.

One administrator in the Department of Psychiatry, closely familiar with QI frameworks, referred to the importance of champions to carry and implement programs, but believed it was essential to have buy in and even consensus from front line stakeholders affected by the program, more so than adherence to the innovation. This is a common viewpoint found in QI frameworks, including IHI's approach. She noted:

> Yea, I think also the decision has to be made not just by one individual or even by a small group, it really should be made by everyone that's going to be affected by the change. If at all possible, you know, so if this is a change that would affect the outpatient clinic, you know whether to try to adapt Evidence-Based Practice to what they're doing versus trying to find something else to do, I think if you don't have the buy in from the people that are going to be doing it anyway, it doesn't really matter because nothing you do will stick. So I think it's more important to have that kind of discussion with the people who are going to be impacted. What we call the stakeholders.

Use of the phrase "what we call the stakeholders" indicated the extent to which this perspective was informed by the respondent's familiarity with QI models.

3.4. Use of collegial relationships to support EBP

Administrators did not only use the dyadic individual-organization relationship to implement EBP use, they also created the conditions for formal and informal collegial relationships among providers that helped providers make sense of EBP and gain awareness of specific resources or capability in specific EBTs.

One formal mechanism, peer review—the evaluation of current clinical cases among clinical colleagues—is intended to support the professional development of providers at the site. It was discussed in only two interviews, and emerged as a forum that could facilitate EBP when done well but had the potential to be used ineffectively.

One administrator described this tension in detail. Peer review supported providers' understanding of how to address a real clinical issue and how to apply all or parts of an EBT in practical situations, providing sustainment for training in how to use specific EBTs in practice.

> Variability is something I do not enjoy, those clinics that have a very robust professional development, peer review process, yes absolutely. Those things happen because your peers are reviewing your notes, your peers are documenting and submitting peer review forms and in their processional obligation to ensure that those qualities of the care given are met. And there are areas that have a phenomenal peer review and morbidity and mortality program.

In the "phenomenal" peer review areas, to this administrator, peer review served as an organizational control on unwarranted practice variation, as well as a tool for training providers *in situ*

because of the significant nuance underlying manualized psychotherapies. However, done poorly, it interfered with provider autonomy and decision-making. As he continued:

> And then there are areas I inspect as regional consultant where they just it's a culture that refuses to be introspective. And there is such a level of conceit when anyone comes in and questions the individual provider in that moment I'm saying you're a bad provider. Instead of a learning institution where we're trying to identify why things happen and how to make it better. There is a culture of personal… everything's taken personally and conceit. And resistance to outside observation and it's considered criticism. And criticism's not what it is, it's positive feedback. And people get offended. It's a cultural problem, I don't think it would be difficult to fix and peer review required instead of bastions of excellence.

A clinic administrator in the Department of Psychiatry described how he used peer review only in selective situations: he did not consider peer review in the case of psychiatrists developing internal standards of care, but he did so with nurse practitioners to achieve supervision, collegiality and cultural goals. As he remarked:

> [Peer review among the nurse practitioners] is more partly because they're supposed to have some degree of supervision, and some of them are fresh out of school, so it's actually helpful to have. And it's also an opportunity to share, just to again to create some degree of collegiality by sharing cases and talking about patients, learning from one another. This is really in practice as much peer supervision as it is my supervising.

He became aware of an issue of overprescription of benzodiazepines through an unintended opportunity when psychiatrists were asked to cross-cover and renew benzodiazepine prescriptions for their peers for logistical reasons, which caused them to review their colleagues' work. I remarked that the cross-cover that psychiatrists were doing for logistical reasons seemed to be acting as a tacit "peer review" process, but he noted that he had not intended to do so and was not inclined to use peer review among those providers.

> So [cross-covering for other prescribers is] really more by accident than anything else, but it gives us, it's an opportunity for us to take glimpses into how the other prescribers here prescribe. I think that in many ways we'd like to limit that because we want people to see their own prescriber. So the goal would be actually to get people to come see their own prescriber as much as possible. And to have and to use prescribing policies and education that goes along with it as a way to influence prescribers' behavior.

3.5. Hiring

The Department of Psychiatry used hiring as a strategic mechanism to implement EBP, by creating the organizational capacity for EBP use and changing the cultural composition of the department, via new hires' research background, clinical experience and interest in EBP. In particular, the department hired researchers that specialize in CBT. The increased emphasis on research was designed to complement and support the increased use of CBT in the clinics and encourage interactions between research and purely clinical staff. Similarly, the department held regular grand rounds and newsletters to encourage interactions between the research and clinical staff, demonstrating the multifaceted implementation strategy. As the Research Director noted:

> And we use a lot of our grand rounds as an ability to start exposing our physician scientists' research to the rest of the department. Our newsletter, that's our way of trying to get the word out. And then putting people in place like [researcher] who actually supervise our social workers and others to be able to have that trickle down effect.

As I will discuss in the next section, hiring also supported the department's initiatives to develop new clinical structures, by providing staffing and expertise.

For providers too, EBP use within an organization could be a deciding factor in employment. One attending physician in Family Medicine discussed the provider's view of hiring for EBP use. Coming from a residency program with a high focus on EBP, the residency program encouraged graduating residents to ask questions that would identify whether and how the site conducted EBP.

> So for instance, my class was looking for jobs. We generally tried to practice Evidence-Based Medicine [at my residency program]. So the specific example that I will give you is, for an otherwise uncomplicated young woman, between the age of twenty one to twenty nine … you're only supposed to do a pap smear every three years. However, there are places in the world that do pap smears every year … And my understanding from the ASCCP guidelines is that it's not Evidence-Based. … And then one of the questions that we were told to ask when we're looking for potential employers is asking them around their culture of Evidence-Based Medicine. And I have heard from previous grads who are now at other practices, where they do get frustrated with some of their colleagues who are not practicing Evidence-Based Medicine, for instance getting pap smears every year on patients who don't need them. And insurance will cover it, but it's not Evidence-Based.

3.6. Clinic Structure

Clinic structure was also a significant enabling factor for EBP that multiple organizations managed in order to create conditions for EBP. Unlike the other implementation strategies, changes to the clinic structure are highly tailored to both the specific EBP intervention being implemented and the current state of the clinic.

3.6.1. Adapting Clinic Structure to Enable Specific Evidence-Based Treatments

Many psychotherapy EBTs are incompatible with existing clinic structures, often because they require longer or more frequent clinical sessions than the clinic is designed to support, or specific provider types that may not be available logistically to work together under the status quo. Administrators weighed questions such as these in creating space for specific evidence-based approaches for a particular condition, which also relieved pressure from other providers who would rather specialize in other treatments.

As the Research Director noted, the Psychiatry department was strategic in applying for research funding, seeking grants that supported the clinical changes they desired beginning with a CBT subspecialty clinic for psychosis. The clinic design included a data collection scheme that capitalized on the department's research infrastructure and access to medical and public health students who could analyze and support the program.

> So the idea is we would want these subspecialty clinics, … and over time, now that we have the research infrastructure here, and we use a lot of our med students, our Masters of Public Health students to be able to then take that data, analyze it, and learn from it and filter it back into the clinic. The, so we just got a grant around providing a new model for addiction treatment … but what we're doing right now, the grant doesn't even start until January, is putting data collection methods into place. So we have an evaluator, and the idea is that we are not changing this whole entire clinical operation without putting data collection methods into place so that we can then look to say wow, look how good our patients did, by using this new model.

The subspecialty clinic for psychosis at the Department of Psychiatry also inspired the Outpatient Clinic Director to reconsider how to structure and promote treatment for another condition, insomnia, demonstrating mechanisms for adapting and scaling this implementation method:

> So it made me think what we really need to have here is a module, the opportunity to refer people to a CBT for insomnia clinic. So my dream would be to have a little, we'll call it a little clinic, but just a couple of social workers, maybe a psychologist, who have an interest in this and have learned how to modify regular CBT to CBT for insomnia, can do a lot of work around sleep hygiene, have some handouts, and where so that when a patient comes to us as prescribers and says they're having a hard time sleeping, we can say, instead of saying oh here I'll give you a pill, we can say, I'm going to refer you to this clinic.

The research psychologists recognized their role in supporting new clinical structures based on CBT, particularly by training those providers who were interested in learning CBT to create the capacity necessary for the change in structure. Having the dedicated program would also enable those who were not specialized in providing CBT to conduct other treatments. As one psychologist noted:

> I would like to see the development of a CBT program, within outpatient. Because we have this like divide between people who really don't want to do Evidence-Based Treatment, and then people who definitely do but need the training. So if we developed basically a CBT, which would really be like an Evidence-Based Treatment program [laughs] within the clinic, then most of us research staff are evidence-based clinicians, not surprising, that we love research. Could really support the professional development of the clinicians who really want to develop that expertise. So I think the establishment of that would provide some good infrastructure.

While these changes were framed as enabling Evidence-Based Treatment in general, they were highly tailored to a specific EBT.

3.6.2. Disseminating evidence-based interventions across a network of organizations

At the network level, administrators established structures that enabled the dissemination of best practices and system-wide standards to sites. The Regional Network had three separate programs for evidence use and dissemination across the region. These included a regional guideline development department, a department that identified and disseminated external evidence-based interventions (the "EBP Dissemination Department" managed by the respondent, as was the guideline team), and a mechanism for local leaders to identify changes and promote them internally. In addition to clinical guidelines for common medical conditions, the EBP Dissemination Department developed a systematic EBP identification and dissemination program to identify cross-cutting interventions without a traditional home.

> I think the difference [with the guideline program] would be when we create guidelines there's different, larger questions, and there is existing infrastructure and groups that manage it already, usually. ... So when we have a guideline on how to treat high blood pressure, there's already the hypertension implementation team ... So they just change what they're doing ... they update that and change what they implement … whereas the [EBP Dissemination program] you find a practice that hadn't even been on your radar before.

One psychology researcher with experience at the network-level in another organization described the tradeoffs administrators make in determining how to create the organizational capability, i.e., how many providers to train in a certain EBT. In certain cases, such as for EMDR, rather than regulating that decision at the organization level, they allowed sites to make that determination themselves.

We are not going to launch the giant training program where we're going to train thousands of people and every hospital's going to be required to send people to the training. We're simply going to say that every point of care [in the organization] is going to have to have at least one person who can offer EMDR ... And we're going to pay to send our people for training. At the discretion of local leadership. And if local leadership says … I don't want to lose time by sending somebody somewhere for training, I'd rather have them work in the salt mines doing the other therapies … fine you know, we're not going to fight with you, go ahead. So long as every patient has access to EMDR because it's an evidence-based therapy, and it's going to be better for some people because they're going to want it more.

3.6.3. Adapting the treatment to the clinic

One administrator used a flexible approach to EBP, adapting the *treatment* to the *clinical structure*. In one case, a substance abuse clinic administrator adapted a treatment modality to the clinic structure and patient population, rather than adapting clinic structure to enable use of an existing EBT with fidelity. As the administrator noted:

Well the whole manual was written, for instance I believe that it's best to keep things simple. So in thirty two days, I broke the manual down to every eight [days.] Because eight times four, thirty two days. And I had different requirements that the patient needed to meet to move from stage one to stage two. So it was very individualistic…

He also adapted the manual over time, based on clinical needs and the input of local providers, developing a formal treatment manual that adapted as a "living organism" tailored to the clinic with staff input via peer review and consensus over the course of many years.

Well, the unit that I ran consisted of a certain amount of clinicians, and when I originally wrote it, and this to me this instrument, this manual was not a book, it was a living organism. Because it would change. We would have meetings and we would fine tune different sections of it. And then when it was rewritten, and it was rewritten all the time, it would go out to the patients with a new piece to it, or a new section. And I would train the clinicians that were there on what the manual was and how it was to be used. And the treatment plan process was based upon the manual. So it was implemented in that way.

3.7. Using organizational mechanisms to incentivize EBP: measurement

Finally, many respondents viewed "measurement-based care" and other approaches to clinical data collection and analysis as integral to EBP. Patient outcome measurement and documentation of provider treatment choice was viewed as both a component of individual EBP, but also as a way to nudge providers to align with organizational standards. These individual-level measurements were also discussed as a way for the organization to evaluate the performance of EBP programs in an ideal case, but this measurement was not feasible given the infrastructure and resources available to the organization.

3.7.1. Use by Individual Providers

One psychology researcher argued that measurement of treatment choice and patient outcomes should be considered a component of EBP at the individual level, and that the organization should provide the infrastructure to facilitate this use:

I think you could argue for example that measurement-based care is Evidence-Based. So the ideal setting for care would use Evidence-Based assessments, in a way that informed measurement-based care, which was Evidence-Based.

In this usage, measurement of treatment choice and patient outcomes enabled providers to assess patient progress and adapt the treatment plan accordingly.

Similarly, another clinical psychology researcher defined EBP in part by the collection of data during the treatment process, particularly in cases when the provider is doing something novel. In her view, data collection serves to demonstrate that the provider is in fact evaluating treatment outcomes, and also contributes in theory to researchers' ability to identify and disseminate successful interventions downstream. However, generalization in this manner is rarely possible because neither the data collection infrastructure nor personnel are available to identify and test novel treatment approaches or adaptation strategies at most clinics.

> The other thing is if you are conducting something, doing something more novel, that you gather evidence on it. And that's part of what Evidence-Based Medicine is as well. So [I] met a lot of well-meaning clinicians doing novel kinds of treatment. And that, if they don't gather data on it, one there's no way you're really evaluating if it's working or not, and two, if it is working, there's no real way to disseminate it.

Despite this perceived use for individual providers as part of EBP, only those respondents with an administrative or research role discussed measurement-based care. Respondents with a purely clinical background only discussed clinical data collection as a way to maintain clinical notes and reminders, rather than as a component of EBP.

3.7.2. Use by Organizations in Management of Individual Providers

The observation that no pure clinicians discussed measurement-based care is relevant in light of *how* administrative and researcher respondents discussed measurement. While they all underscored its ability to help clinicians assess and adapt treatment plans, many of the administrators also discussed the use of measurement as a tool for organizational oversight or standardization of providers' practice. One Multi-State Network administrator described how his organization uses a requirement to document treatment choices to disincentivize providers from defaulting to "what [they are] most comfortable with":

> To an outside observer, they may say the provider knows best. But it's important when the provider puts pen to paper, saying this is why I'm using these other approaches, not just defaulting to what I'm most comfortable with. Many are certified in all [EBTs] but are really comfortable in CPT and may just do that. … But providers need to be providing contoured treatment to the patient, and you get this when you have a peer reviewed literature and select/contour the treatment to the individual and you're not just doing the treatments you are most comfortable with.

Here he suggested that in the absence of "[putting] pen to paper," providers are likely to default to what they are comfortable with, instead of the organization's standard of specific treatments with a "peer reviewed literature." The requirement to document therefore served an organizational control role, by which the administration introduced barriers to use of treatments outside of the organizational standard.

Another administrator at the Multi-State Network similarly described using treatment choice documentation as a barrier to deviation from the default treatment, in order to disincentivize providers to deviate without more closely considering the clinical justification:

> But you can set parameters in there about what they have to do if they don't follow the Clinical Practice Guideline, like in some cases we have to make sure, you tell them they have to document it a certain way. Which can be kind of a pain and they don't want to do that, and so it kind of shifts it this way.

While researcher and administrator respondents acknowledge that the system of measurement at their organizations are not "ideal" for the actual collection and use of practice data as intended, they still asserted that providers should carry out these practices as part of EBP as though they were able to achieve these benefits. That these benefits were not attainable in practice underscores that a primary benefit of this documentation was practice change toward the organizational standard.

For example, the university medical center administrator discussed how the site would use EHR tools to encourage provider compliance with the guidelines they were developing. The process of documentation and the potential uses for data collection were discussed in the abstract, as they were tied to an idealized data collection and analysis infrastructure (such as natural language processing) that did not exist at the site and would require significant investment and analytical skill. As the administrator remarked:

> So this is where our tools should, our electronic tools should be able to help us, right? … Should being the operative word, right? Because it's only as good as what you put in. So you don't have the field defined check box … that says I'm opting out of this, and put your reason here, from a drop down menu of a dozen reasons why you could potentially opt out of treatment x, it's going to be very hard to understand what the provider was thinking at the time they opted out … Natural language processing should be able to help in this area, to understand and get into the mind of [the provider] when he decides not, because he should be writing about that about in his notes … But those just, they're not ready for primetime in the world of the average practitioner right now, right? And then ideally at the organization level, what we're doing is we're applying whatever set of tools we have and right now the tool is like manual chart review, which sucks, right?

On the other hand, the use of measurement as an incentive and measure of EBP use at the organization level could create adverse incentives to providers to deceptively document care, especially if they disagree with the way the organization implements EBP. One administrator in the Multi-State Network described how they designed and employed an aggregate metric to estimate EBT use based on provider-entered treatment choice data:

> The EBT metric we now have is based on diagnosis data in [the EHR] and the modality information the providers put it. It's really only a first stab at whether or not someone is using an evidence-based treatment. The only way to really know is to go into the record and read it. It's really really easy to say that you are using PE but you are not really doing it. Even if you documented it in the notes, you could not be sure – now if you could observe a session or look at key variables in the patient reported outcomes data – you may have a better idea. … The metric itself is "bogus" until we do audits with random chart reviews. When we can answer the question of what % of people who the provider says are getting EBTs are actually getting EBTs. … Most providers adopt EBTs. – if providers are pushed to do an EBT, they will just say they are doing it.

Though they knew the metric was inaccurate, they believed it was important to create a baseline measurement, both to understand the current state of EBT use, and to establish and communicate the organization's prioritization of EBP use. But he noted that because the measure was tied to specific EBTs, it was "bogus" without a closer chart review "audit" of providers, and similarly providers could easily say they are conducting EBP without the intended fidelity or approach (indeed, they may be incentivized to do so). The metric therefore provided a clear message and incentive to providers not just to do EBP, but also about what EBP means and how to satisfy the organization's interest in its conduct. That the administrator framed chart reviews as "audits" suggests that the data collection initiative was in part a mechanism of organizational control of provider activity. The measurement challenges he identified also underscored the difficulties in practice of relying on usage rates of specific EBTs, an output metric, as an indicator of EBP use.

4. How do organizations choose EBP interventions?

4.1. Administrator models of EBP affect EBP intervention design

Within stakeholder groups (clinicians, administrators, and researchers), respondents varied in terms of the implicit model of EBP they ascribe to (Table 5.2; see Ch. 4). Respondents with research experience were evenly split between Decision-Making and EBT models, with all but one of the EBT model researchers coming from the mental health professions. Similarly, administrator respondents predominantly held an EBT-based or Resource-based model of EBP. Those administrators with a Decision-Making model of EBP were in the Department of Family Medicine and implemented clinical approaches in line with that view, or were situated at the system-level of large organizations with less margin to unilaterally implement clinical policies in line with their views.

By and large, administrator models of EBP and the EBP activities implemented by the department were closely related[14]. Other than the Department of Family Medicine, most organizations implemented EBP activities designed around specific evidence resources and EBTs, aligned with those administrators' Resource-Based and EBT-Based implicit models of EBP. The Department of Family Medicine, predominately staffed by administrators and researchers with a Decision-Making model of EBP, implemented EBP programs closely tied to provider decision-making and evidence consultation at the point of care. The Department of Psychiatry implemented a broad range of EBP programs through a range of implementation methods (including policy, hiring, clinic structure changes, and local research), but these centered primarily on enabling the use of specific EBTs (notably CBT), which was the predominant model of EBP among administrators I spoke to and in the mental health domain writ large. However, the Chief Quality Officer of the Regional Network, within his scope to oversee guideline development and the EBP Dissemination program, took a strong evidence-push approach, consistent with his Resource-Based model closely tied to the rigor of external studies. The administrators in the Multi-State Network supported guideline- and EBT-based programs, consistent with their Resource-Based and EBT-based models of EBP.

The few counterexamples from the close alignment between administrator model of EBP and organization EBP activity occurred for two reasons. First, they occurred in cases where the administrator did not have sufficient capacity to unilaterally carry out their view; for example, one administrator with a strong Decision-Based model of EBP wanted to incorporate more decision-making aspects and flexibility into a guideline development project he was involved with, but was unable to because of the number of experts involved in the project and the "smoke-filled room" nature of that process that he described. Another administrator and researcher believed that providers should use a holistic decision-making approach to EBP, but believed that the strength of evidence in favor of certain treatments' effectiveness relative to most providers' innovations could be best achieved through clear dissemination and EBT use programs. Second, they occurred in the case of organizations that carried out sweeping, multi-faceted EBP implementation programs, such that each individual component, which may not have exactly

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[14] While administrator model of EBP and organizational activity are closely coupled, it would be difficult to claim causality. Both administrator models and organizational activity are driven by norms around EBP within the profession. The administrator model and organizational activity are likely reinforcing, such that implementing specific resources or EBTs within the organization positively supports the administrator's model of EBP. Finally, given the challenge of observing both provider outputs (in terms of fidelity to the EBT) and patient outcomes, managers are likely to follow their own style in prioritizing the objects of management. In particular, decision-making inputs and outputs are likely to become the focus of managers if they are the most easily measured and controlled (Wilson 1989:171).

reflected administrators' views, contributed to a broader process and culture change at the organization. For example, the Multi-State Network and Regional Network both featured large administrative structures that diluted the capacity of any individual administrator to establish broad EBP programs according to their individual view, and I was unable to interview enough administrators to gain an understanding of the predominant EBP models among administrators.

4.2. Motivations for using EBP as an organizational intervention

Motivations for using EBP as an organizational intervention is an important dimension of program design that has not previously been studied in implementation science, yet I find that it has an important effect on the selection, design and implementation mechanisms of EBP interventions. Administrators chose different interventions and designed them differently to achieve specific purposes (Table 5.1). The different interventions administrators chose therefore reflected their different perceptions of the organizational status quo, desired changes, and how EBP operated as an organizational initiative (i.e., as a tool for achieving desired organizational changes).

Motivations that administrators cited in developing EBP interventions included:

- Disseminating information and provider awareness of evidence (Decision support)
- Increasing provider capacity in specific processes or treatments (Training)
- Increasing organizational capacity in specific treatments
- Decreasing unwarranted practice variation (Standardization)
- Tailoring evidence to the local setting and patient population (Acceptable variation)

4.2.1. Disseminating information and provider awareness of evidence

Administrators frequently discussed organizational EBP interventions in the context of making general information or education available to clinicians as decision support. This motivation is in some sense the most consistent with the theoretical model of EBP in which individual providers independently make clinical decisions incorporating evidence. This motivation aligned most closely with the resource dissemination EBP activities, providing resources such as third-party decision support tools, journal clubs, and conference funding to facilitate provider.

4.2.2. Building provider capacity in specific processes or treatments

Along with disseminating information, another frequently cited organizational intervention was training providers in specific processes or treatments, particularly training mental health providers in manualized psychotherapies. The mental health departments in this study selected specific EBTs and provided training in order to integrate providers with heterogeneous backgrounds and ensure access. For example, the Department of Psychiatry actively aimed to train residents in multiple schools of psychotherapy, including both CBT and psychodynamic psychotherapy. As the Research Director noted:

> So our current didactics for residency has expanded quite a bit in the past three years under the leadership of [the Residency Director]. They now have full day didactics every week, and they are exposed to you know psychopharmacology, to Cognitive Behavioral Therapy, to psychodynamics, and it is very well organized and they also have supervisors that supervise them for Cognitive Behavioral Therapy or psychodynamics. And so it's, it's intense.

Many older providers may not have received training in certain psychotherapies during their programs, and psychiatrists in particular received less psychotherapy training in the past. The training program therefore was designed to bring providers with diverse backgrounds and training up to speed on the core EBTs to be used in the department. As a psychiatrist in the Department of Psychiatry noted:

I mean for better or for worse, our job here [as a psychiatrist] is to do diagnostic evaluations and prescribe medications. And we don't do therapy here. And for better or for worse, especially as an older psychiatrist, I wasn't trained in CBT. The people that came ten years after me all got trained in CBT but I'm old enough to sort of have missed out. And I've never really learned it particularly well, so I'm really pretty unsophisticated about it.

The Department of Psychiatry also used the research program to build department members' capacity in research, offering opportunities to become more involved in studies and to encourage providers under them to do the same. Through the research program, they offered the opportunity to build individual capacity in research, awareness of the research literature, and attention to identifying potential areas of quality improvement within the clinic. As a clinic chief in the department noted:

One of the big changes that [the department chief] made, is that he really wants to put emphasis on research. And helping to support anybody here who's interested in doing research. And he brought over [The Research Director], who's been really instrumental I think in communicating to residents and medical students and faculty that if they want to do research, that she's there to support them. And [the research staff have] always been super accommodating and supportive. … Like I have these ideas about here's some cool changes we want to make, and [the research staff] can say, we'll do this kind of project here around it, so it's been really, really kind of amazing. Because I'm not a researcher, and so I don't really even think that way, but to have people like that who are sort of really interested has been super helpful.

4.2.3. Organizational capacity for specific innovations

In discussing the dissemination of specific innovations, administrators focused not only on building providers' individual capacity to conduct those treatments but also often discussed making specific EBTs or other innovations available to the patient population; this is an organizational goal but must pass through some organization-provider interaction to encourage the practice change.

For example, as the Research Director noted, the Department of Psychiatry built up a subspecialty clinic to use CBT for psychosis. This change included a change in clinic structure, training on specific skills (i.e., CBT), and hiring for clinic management, provider skills, and research. This change built organizational capacity via engaging and training individual providers in CBT, providing new roles that they had not had before.

I'll use the psychosis clinic as an example because it's the newest and we're in the middle of it now, is I'm noticing again anecdotally, excitement. Like, oh I'm going to be responsible, people now have a leadership role. We have social workers now who are being trained in Cognitive Behavioral Therapy for psychosis and are running groups and doing things that they hadn't done before, and the sense that we're getting is this excitement, that wow this is kind of cool, and I get to learn this new skill and now I have a team, because we've developed a team, and there's the nurse and there's the psychiatrist and there's the social worker and there's the NP, and they each have their defined roles, all for the care of this patient population. And so that is our first pilot.

As the Research Director at the Department of Psychiatry noted, the department identified a gap in training in Evidence-Based Treatments, and used hiring "very qualified leaders in the field" as a way of establishing a knowledge base and enabling training of other providers. With that cohort in place, they are "bringing everybody back up" to create the organizational capacity to provide EBTs more broadly.

So I think on an administrative perspective, in the past couple years it's been kind of top down in terms of really hiring very qualified leaders in the field, and now we're in a phase of bringing everybody up.

4.2.4. Standardization, decreasing unwarranted variation

While stakeholders generally agreed that the organization should not be overly prescriptive in terms of adherence to the organizational standard, guidelines, or specific EBTs, many EBP interventions were designed with the intent of narrowing the range of variation in care within the organization. For example, one psychology researcher noted that adaptation of specific EBTs is often less effective than believed, even when an informed, 'innovative' change from the treatment as-designed:

> There's two issues with fidelity. One that aims at innovation. People think that they have a better way to flex the protocol. And then just ones that have to do with competence, people forgot something, they don't know how to do it well. In the things I've seen so far, most of the innovation, the improv that people do is not terribly effective … Now it should be, and that's where we do get improvements in all fields of everything, where somebody goes off script a little bit, and they make smart choices and they find a better way to do something. But in general, even though I hear people saying that they change things because they think it's better, we don't see that, I'm unaware of evidence. And in my own experience, with anecdotal accounts of improvisation, it certainly hasn't helped.

Administrative respondents typically emphasized their interest in minimizing the competence-driven deviation from the treatment as-designed, but his point underscored that even the ostensibly 'desirable' innovation-based deviation is still likely less effective than expected.

The University Medical Center planned an intervention to use guidelines to manage practice variation. The motivation was to anchor providers to a particular standard, as the intervention designers viewed any standard as beneficial over "freestyling." They noted that other organizations such as the UK National Health Service would have to do so to different degrees depending on the organization structure and stakeholders.

> Administrator: I think it's a little bit different, like if you were in the NHS or some other place more governmentally
> Provider: prescriptive … Right. So one of the things we're trying to do is to pull back the whole, using protocols to drive practice. And, you know this already but any system that requires providers to freestyle will have worse outcomes than one that requires providers to use any protocol. Even crummy protocols get better outcomes than the freestylers. The problem is, one there's a cultural change that's going to be needed, two there's the information management challenge, that I think is actually the biggest problem. It's hard to get—
> Administrator: How do you get the protocol to the point of care?

The administrator and provider discussed the interplay between organizational, provider, and patient roles in choosing and implementing guidelines and treatments. They did not view their organization as overly "prescriptive." Rather, they view a guideline as a clinical aide, supporting primary care physicians to reduce decision fatigue, particularly in light of the broad range of clinical issues they face in primary care. As a result, they nudge providers to follow the guideline, changing the default course of action from purely provider-determined to the guideline-indicated course of action. This default change is a nudge because they change the default without requiring it by expecting providers to document deviations from the guideline. They view this intervention as an opportunity for organizational intervention to alleviate providers' cognitive burden in selecting common treatments, while achieving an organizational goal of lower practice variation.

> Administrator: So I think that's where the organization can step in, we can look at our most common things that we do and say you know what, we're going to come up with a practice guideline for people who work here, to be the jumping off point

Provider: And we're going to disseminate it, and make it easier and simpler, and frankly if you're trying to follow a guideline and you can't remember if it's twenty five or thirty, you're going to probably get better outcomes than if you're just flying around anyway. So it doesn't have to be perfect, but

Administrator: So that's how the organization has the interplay with, trying to support the individual practitioner. Because decision fatigue is a real thing, right? … So to the degree that we can, certainly take the decision, if the party line is we're going to follow these protocols and we can get people to agree to that, that helps with that.

Similarly, an administrator at the Multi-State Network noted that the use of guidelines is intended to reduce unwanted variation, and that documentation requirements are instituted in order to reduce "bad variation." By documenting the deviation, the administrator expects that providers are compelled to think about and explicitly support their clinical decisions. The EBP implementation program therefore is designed not only to reduce variation by educating providers, but also by instituting barriers to care that is perceived as undesirable from the administrator's perspective.

Yea, so there's various things you try to do, right, to reduce unwanted variation. Right, so that you want, when variation occurs you want it to be intentional and you want it to be safe. Somehow leading to high quality or however you want to phrase it. You want it to be good variation [laughs] instead of bad variation, to put it bluntly. So bad variation is laziness, bad variation is, I'm just doing this because this is how I was taught when I was in grad school forty years ago, and I'm not changing, no matter what the price, that's examples of bad variance, you don't want that. So when people have to take steps to document when they're varying from a Clinical Practice Guideline, as an example, that's a discourager. So they're usually only going to want to do that, and put that in black and white, [if] at least in their mind, there's a good reason. Like my patient will benefit, because you know, some unusual thing about that particular patient, of which there are many. So if you create those kinds of things sometimes, then there, you know it's natural flow of people move to the path of least resistance. Which you want if you're confident you have a good path for them to be on, right?

This strategy emerged from the organization's challenge of setting standards to decrease population-level practice variation, while relying on the provider to judge which cases merit deviation from the standard. The administrator's challenge can be understood as a principal-agent problem, where the administrator (principal) relies on a professional clinician (agent) to deviate from the Clinical Practice Guideline only in appropriate cases, but the administrator cannot know which cases are appropriate. The documentation that the administrators described acted as their manner of aligning principal and agent incentives to be sure that the provider deviated for desirable reasons rather than (real or perceived) undesirable reasons such as comfort with other, suboptimal approaches, "the path of least resistance," and "laziness."

Organizations have a variety of options in choosing guidelines to disseminate. The Department of Family Medicine, with its predominant Decision-Making model of EBP and culture of consulting evidence resources in the clinical workflow (Ch. 4), by and large did not establish its own guidelines for clinical conditions. Instead, the department encouraged providers to actively consult external resources. The Department developed a handful of local guidelines, but these were not a tailored evaluation of the evidence, rather they were driven purely by local logistical needs. As one attending physician remarked:

[Our site] does have some guidelines on certain things, but the ones that we encounter the most are around prenatal care. … There are ACOG, which is external, the American College of Obstetrician and Gynecologists ... But [our site] has to make a policy for certain things. ... Within [our site] between Family Medicine and OB they have had to hammer down a formal workflow for certain things. Some of it sometimes goes around okay well this sort of a patient with this level

complexity for whatever reason is fine to stay within Family Medicine. And this patient has to be transferred to obstetricians for all their prenatal care and eventually delivery. This kind of patient cannot even be seen within [our site], they need to be completely referred externally, because for various infrastructural reasons we cannot care for this patient optimally.

One administrator at the Multi-State Network noted that EBP was a good candidate for the use of organizational policy because there was a convergence of a clinical problem, i.e., an increase in clinical demand for mental health treatment, and an existing solution, driven by available research supporting specific treatments that could reasonably stem the need.

I think when you start writing policy about these kinds of things, you have to, one, be sure there's a problem right to solve. So [that] there's an area where you need policy, right, because there's infinite things within healthcare you could conceivably write policy about and standardize, right? [laughs] But you only need to do that on these focused areas where there's a problem, there's something you need to solve in doing that. So [mental health] was a good example, right, the incidence of it had greatly increased. ... And then you had on this end you had more and more research coming out about things that could be helpful, right, so it's not just something well this is a problem but we don't have a solution.

So EBP policy, and specifically the standardization of care around a guideline, was an area where administrators believed that standardization would stem the problem. He did underscore that the solution did not necessarily have to "come from the research world," that is, EBP was not an end in itself. He continued:

It was like well there's a problem, and we think we've got pretty decent treatment mechanisms out there, so we have something to push on to the local folk, if they're not already doing it. It's not like we don't have answers, we think we've got some good answers here, so we're not just bringing the problem up, we're trying to push a solution, right. So those, I think two of the important elements in the policy stuff, is you've got to have a clear problem, but then you've also got to have a good solution. Now whether or not that solution comes from the research world. Where that solution comes from could be all kinds of different places…

4.2.5. Tailoring evidence to patient population, acceptable variation

Certain administrators underscored the importance of tailoring specific EBTs or other evidence-based resources to the specific needs of the patient population. This motivation led them to choose EBP interventions that either offered more flexibility to providers, involved administrator tailoring of clinical practice guidelines to the local setting, or establishing research programs. These three interventions therefore emphasize the standing of three different stakeholder groups in terms of who the organization predominantly relies on to adapt the treatment.

Through activities such as local research, allowing provider adaptation, and local development of treatments or guidelines, organizations readily allow for significant adaptation of specific EBTs or guidelines to the practice setting. Despite many stakeholders' (and some respondents') strong belief in the importance of fidelity to proven treatment mechanisms, they build in considerable local discretion in adapting treatments or guidelines to the local setting.

Administrators often encouraged adaptation in order to benefit from the professional expertise of their providers. One administrator with the Multi-State Network noted that it is important to allow providers autonomy because of their professional expertise and the variation across patients.

And this is an area that gets into, within healthcare, policy and procedures, as much as you can require care to adhere generally to a Clinical Practice Guideline, for example, or some other care process, you really can't go so far as to say look, every provider will deliver one of these three

things because within healthcare in particular, behavioral health, there's a ton of variation within individual patients, and that's just the nature of the business within which we work. So you can't go so far as to be a hundred – you know completely rigid, but you have to let professionals, you're not just hiring employees to flip a burger a certain way, you're hiring professionals, part of that is making sure they have enough leeway to use their professional judgment that they learned, right?

This finding is perhaps unsurprising, as clinical expertise and discretion are built into the theoretical model of EBP at the individual level, and as all respondents do in some way acknowledge the flexibility of evidence-based approaches. But the strength of some calls for fidelity, combined with the tacit, indirect nature of local adaptation in certain cases reinforces the perception in some settings that EBP is overly rigid, "cookbook," and ill-suited for local needs, despite the adaptations designed in almost all cases to allow providers sufficient discretion.

Another administrator noted that in order to gain acceptance for EBP, he used "evidence-informed care" rather than "Evidence-Based Practice." He believed this term would appeal to skeptical providers by allowing them more discretion in applying treatments in order to encourage them to read articles. He noted that "evidence-based" appeared overly prescriptive and as a result "evidence-informed" was more palatable by incorporating both the "art and science" of clinical care. In this case, adding flexibility into the organizational approach served the strategic goal of making the intervention more palatable to professional providers.

> I've found that there's less emotion tied to evidence-informed care. Clinicians are more willing to accept it because there's a sense it's less prescriptive. For me Evidence-Based refers to an actual basis [for the intervention], RCTs. Evidence-Informed is you took out some elements from the intervention, from what's known to work and did whatever else you want to do with it. It's not wrong – this is art and science. The term Evidence-informed gives people more confidence that they're doing something grounded in science. If it gets people reading articles then I'm all for it! They don't have the time to read the articles – neither do I and it's my job.

Finally, researchers involved in guideline development underscored the significant discretion that they were intended to be incorporate. Some administrators and researchers argued that guidelines were often treated as more algorithmic than they are intended. As one researcher noted:

> I think there's a danger, you know, people don't read the introductions to guidelines. They don't read the whole guideline. The beauty of a guideline is it's a textbook that can be used dynamically, and you don't have to read the whole book. You know, if anybody ever read the introduction to the DSMs, they would see how much more flexible they are than [believed] to be.... But nobody does. And so I think there's a real danger of reductionism, there's a real danger of turning medicine into something autonomous, in which the doctor themselves becomes unnecessary. You know we all applaud Watson when it gets the answer right, but I'm not ready to be treated by Watson.

Another researcher expressly noted that a particular guideline was not intended to be an algorithm, but rather an input for individual and organizational decision-making. To him, neither the individual nor the organization should use the guideline in a purely algorithmic way:

> [Our] guideline is not an algorithm, a mandate for care ... And they say that in their guide--so all guidelines say these are documents to help patients, providers and inform organizational decision making, and they can be translated into mandates, but they are not the same thing, because one thing that we didn't talk about that is really really important, is the patient perspective in clinical decision making, and strategies for informing patients and using patient information in the clinical encounter. And so I'm talking about things like Shared Decision-Making.

5. Discussion

While EBP is an individual-level framework in theory, it requires significant organizational resources, interventions, and structure to carry out. Further, EBP contributes to organizational goals, and as a result, administrators have an interest in designing interventions to direct EBP toward those ends. Organizations differ considerably in the types of activities and interventions they carry out under the banner of EBP, including the manner in which they implement the interventions. These interventions often employ significant organizational resources and are intended to achieve a wide range of goals; in some cases, they represent core quality improvement initiatives for the organization.

Organizational EBP interventions in this study focused heavily on the dissemination of specific resources (decision-making inputs) and use of specific EBTs (decision-making outputs). This organizational focus on the choice of resources and outputs introduced a direct stake for organization administrators in the previously individual-level process of EBP, in which administrators also evaluated, selected, and disseminated specific evidence artifacts at the organization-level. This chapter demonstrates how administrators navigated this role and its effect on EBP intervention design and organizational relationships, which ultimately affected implementation strategies and implementation outcomes. This chapter therefore contributes to the exploration phase of EBP intervention design and implementation, about which little is known as compared with the active implementation and sustainment phases (Aarons et al. 2011; Moullin et al. 2019).

Administrators (at the clinic, department, medical center, and healthcare system levels) consulted a wide range of sources in identifying potential organizational EBP interventions, including the research literature, professional society guidelines, peer institutions, local staff opinions, and their own expertise. Oliver and de Vocht (2017) demonstrated the wide variation in sources that health system administrators and policymakers consult in evidence-based policymaking; this chapter demonstrates that administrators cite a similar range of sources in making policy about provider use of EBP. While EBP interventions have typically been studied from the perspective of innovation implementation, taking the innovation to be implemented as given, this chapter demonstrates that administrators are in effect conducting Evidence-Based Policymaking about Evidence-Based Practice, to identify, adapt and implement EBP interventions according to local normative priorities. Chapter 6 will address how administrators' and local stakeholders' interpretations of evidence and normative priorities are reconciled in the design of EBP interventions, further underscoring the normative policymaking that implicitly occurs in the design of EBP interventions.

I find that organizations used EBP interventions both to support individual providers' autonomous use of EBP and to strategically adapt provider care to address organizational goals. While the former is in line with the individual-level EBP model, the latter may be in some sense at odds with the conception of EBP as individual providers' interpretation of evidence for individual patients. I find that organizations supported individual providers' use of EBP by 1) disseminating information resources for decision support and 2) providing training in specific processes or EBTs to create individual capacity. Organizational goals that administrators used EBP to address included 1) building organizational capacity in specific treatments, 2) standardizing practice by decreasing unwarranted variation, and conversely 3) tailoring external knowledge to the individual patient. Even in achieving individual capacity building, organization administrators often had significant input about which resources or EBTs providers would train in. This chapter underscores the important role that organizations play in influencing individual EBP.

Administrators considered measurement of patient outcomes and provider treatment choice a significant component of EBP, while providers did not discuss measurement as a component of EBP. Documentation of treatment choice was viewed not only as a component of individual EBP, but also as a strategic tool to nudge providers toward the organizational evidence-based treatment standards.

Administrators' implicit models of EBP also affected the way they framed and carried out EBP interventions at the organizational level. Most organizations in this study relied heavily on resource dissemination and EBT training, in line with models of EBP that emphasize these decision-making inputs and outputs over the decision-making process; the Department of Family Medicine was the exception to this rule due to their focus on decision-making. Administrators also drew heavily on their clinical experience, and on their research experience if applicable, in describing their views on EBP as an organizational initiative. The heavy focus on specific resources and EBTs in designing EBP interventions acts as a proxy for the broader concept of EBP, at least in part due to administrators' own emphasis on these tools via their implicit models of EBP, but when implemented in organizational contexts affects how providers view, carry out, and measure EBP use. Framing EBP use around specific resources and EBTs affected how administrators discussed the tension between fidelity and provider discretion—framing these concepts around the specific guidelines and treatments—creating concrete, measurable standards for care, but at times making it difficult to interpret "bogus" indicator metrics to determine the effects of EBP interventions and how providers make decisions in practice.

Finally, despite many respondents' (and EBP scholars') emphasis on fidelity to specific Evidence-Based Treatments (EBTs) or guidelines, all EBP interventions observed in this study incorporated some mechanism for adaptation to the local setting, for example allowing provider discretion, developing local versions of national clinical practice guidelines, or establishing a clinical research program at the site that provides a framework for treatment adaptation or augmentation. Respondent views about the tension between fidelity and discretion, then, are a reflection in part of difference in degree of fidelity, but also implicitly reflected organizational beliefs about when (and for whom) judgment is acceptable and where stakeholders should maintain fidelity to standards.

Table 5.1. Observed organizational EBP interventions, their constituent activities, and the mechanism of change affecting clinical practice.

Organization	EBP Intervention	Associated EBP model	Activity	Mechanism of change
Dept. of Psychiatry	CBT	EBT (Output)	Training/resident education	Individual capacity, awareness
			Clinic structure change	Org. capacity
			In-house research, hiring	Awareness, org. capacity
	Benzodiazepine deimplementation	EBT (Output)	Formal policy	Local standards, awareness, compliance
	Integrated Behavioral Health	Organization-level	Clinic structure change	Org. capacity
Dept. of Family Medicine	EBP Training	Decision-Making (Process)	Training/resident education	Individual capacity, awareness
			In-house research	Awareness, org. capacity
	Point of care reference tool dissemination	Resource (Input)	Resource dissemination	Awareness
	Meetings about guideline changes	Resource (Input)	Resource dissemination	Awareness
Regional Network	Guidelines	Resource (Input)	Local guideline development	Local standards
			Guideline (resource) dissemination	Awareness
	EBP Identification and Dissemination program	EBP (Output); Organization-level	Clinic structure change	Awareness, Org. capacity
Multi-State Network	Guidelines	Resource (Input)	Local guideline development	Local standards
			Guideline (resource) dissemination	Awareness
			Clinic structure change	Org. capacity
	EBT Training (e.g., EMDR)	EBT (Output)	Training	Individual capacity, awareness
University Med. Center	Guidelines	Resource (Input)	Guideline selection	Local standards
			Guideline (resource) dissemination	Awareness
			Guideline compliance documentation	Awareness, compliance
Substance Abuse Clinic	Treatment manual development	Decision-Making (Process); EBT (Output)	Treatment development	Org. capacity, individual capacity, local standards

Table 5.2. Implicit EBP Model by Respondent Role

Implicit EBP Model	Clinicians	Administrators	Researchers
Decision-Making	25	4	5
Resources	9	4	
EBT	10	8	5

Chapter 6 - Evidence-Based Practice in Context: Professional Standing, Autonomy and Identity

1. Introduction

The use of Evidence-Based Practice (EBP) as both an individual decision-making model and an organizational initiative is colored by providers' professional role and their organizational context. Providers are professionals with, in theory, a license to practice with discretion accorded by their professional societies in acknowledgement of their specialized knowledge (Abbott 1988; Freidson 1988). But they also practice within healthcare organizations, which impacts the scope of individual providers' professional discretion and introduces collegial relationships with other stakeholders who lay claim to different types of knowledge, offer different resources, and play other professional roles (De Bruijn 2012). EBP affects and is affected by the way providers and other stakeholders view their relationship to clinical knowledge, approach to decision-making, and identities as professionals.

This chapter extends the analyses presented in Chapters 4 and 5, drawing on the same data to address the broader social and inter-professional dynamics of EBP use in practice. Chapter 4 addressed variation in EBP use in provider-level clinical decision-making, i.e., within its theoretical scope as an individual clinical decision-making model. Chapter 5 demonstrated that despite the provider-level framing of EBP theory, organizations also act under the banner of EBP, and identified the motivations and types of EBP initiatives that organizations undertake in order to achieve clinical ends. This chapter explicitly considers how the organizational context of EBP affects provider, healthcare administrator, and researcher roles. EBP use in organizational contexts introduces a number of social phenomena that are not addressed in EBP theory; EBP both affects and is affected by professional relationships in the organization. While EBP debates have centered on the kinds of information providers should use and how they should use it, they do not yet address how to navigate the competing claims that arise in the organizational setting of who has standing to interpret evidence in making those decisions, and how providers should incorporate organizational and external standards.

Despite these important social dynamics around EBP, there is little theory addressing what EBP means as a social phenomenon *in situ*. While EBP theory does prescribe providers' taking into consideration clinician expertise and logistical factors (Haynes et al. 2002a), there is little theory on how individual providers interact with their organization and colleagues to interpret evidence and carry out EBP. The few studies that have done so have been influential, demonstrating the complex and surprising ways stakeholders use EBP in practice; for example Gabbay and le May (2004) demonstrated the social dynamics guiding the interpretation and use of clinical practice guidelines in practice, showing that providers do not directly apply clinical practice guidelines algorithmically as written, but instead collectively construct tacit "mindlines" that more generally guide practice. A systematic review of research following from the mindlines study found that many scholars "dismissed" the use of mindlines as an improper, heuristic approach to EBP, preferring to interpret the finding as poor application of the existing model of individual-level EBP rather than adapting the model in light of the described social construction of clinical knowledge among professional colleagues (Wieringa and Greenhalgh 2015:1), perpetuating a theory-practice gap.

This chapter presents the social factors that affect EBP in the organizational context, demonstrating how stakeholders use EBP to achieve inter-professional and organizational goals beyond

purely clinical decision-making. These social uses emerge in organizational contexts as departures from the individual-level clinical decision-making model of EBP as presented in Chapter 4 and the design of organizational interventions to effect clinical ends as presented in Chapter 5. However, as I will show, they inextricably affect how individuals understand and carry out EBP and how organizational interventions are designed and carried out. I describe how respondents view stakeholders' *standing to evaluate evidence*, *provider autonomy* to make practice decisions, and how EBP relates to providers' professional *identity.* Finally in light of these findings, I address the models used to implement EBP innovations and present an alternative framing of EBP implementation based on the top-down and bottom-up divide in the policy implementation literature.

I observed several types of inter-professional behaviors related to EBP use in organizations, what I call: (1) stakeholders *renouncing* standing to evaluate evidence, (2) *demonstrative* uses of evidence to claim standing, and (3) *administrators claiming standing* to evaluate evidence. Further, depending on their beliefs about what it means to conduct EBP (Chapter 4), stakeholders define discretion as either internal or external to EBP, which affects how they design and react to organizational EBP programs and policies. Particularly when implemented as an organizational initiative, views about EBP are an expression of stakeholders' deeper beliefs about these concepts, as well as about the organization's role in managing professional providers. Beliefs about standing to evaluate evidence, autonomy, and identity underlie both the design of EBP policy (i.e., what EBP activities are selected and how they are implemented) and providers' views of organizational EBP initiatives. By directly addressing the social construction of EBP within the organizational context, this chapter extends EBP theory to more realistically address its diverse uses in practice.

2. <u>Standing to evaluate evidence</u>

The use of EBP in the organizational setting introduces stakeholders and organizational interventions that are not directly accounted for in the individual model of EBP and that nevertheless affect its use. Organizational stakeholders vary in their beliefs about what evidence providers should use and who has a stake in interpreting various evidence resources for use in practice (Chapter 4). Given the organization's stake and activity in shaping providers' EBP use, the provider-organization relationship affects what it means to conduct EBP in context (Chapter 5). This relationship raises questions of stakeholders' relative standing to evaluate evidence. That is, in situations of debate about what the evidence says and how it should affect practice, how do stakeholders reconcile whose interpretation of the evidence holds primacy? EBP theory does not address this question of whose interpretations of evidence matter because under the EBP model it is assumed that individual providers, guideline developers, and other decision-makers individually evaluate, interpret and apply evidence (e.g., Dorsch, Aiyer, and Meyer 2004; Evidence-Based Medicine Working Group 1992); the model is therefore agnostic as to how to resolve competing interpretations of the evidence. When conflicts arise, stakeholders debate either the appropriateness of the theoretical model writ large (e.g., Cohen et al. 2004) or the evidence or appropriateness of the specific EBP intervention from a clinical standpoint (e.g., Steenkamp 2016b), rather than the question of how organizational stakeholders do and should interact in organizational EBP programs more generally. This section addresses this gap by introducing the roles and standing to evaluate evidence held by various stakeholders, and demonstrating how stakeholders' standing to evaluate evidence relates to the EBP activities implemented by the organization, the organization-provider relationship, and provider identity.

Respondents expressed a wide range of views about who has standing to evaluate evidence, how they use this standing, and how it affects their relationships with other stakeholders across individuals and organizations, even as they all ostensibly claim to conduct EBP. I define *standing to evaluate evidence*

as perceived legitimacy to interpret external evidence *within the context of EBP,* including both the skills to evaluate evidence and a perceived role to do so. Respondents freely discussed both the standing they attribute to themselves, and the standing they attribute to other individuals (e.g., their attending physician or clinic chief) or groups (e.g., hospital administrators, expert groups, or researchers), and the ways these claims of legitimacy complemented or competed with each other, and affected stakeholder relationships. These beliefs affect the evidence that providers access and the expectations for how they interpret and apply this evidence.

2.1. Stakeholder claims to evidence evaluation standing

EBP is conducted within the context of available external evidence. Stakeholders vary in their beliefs about the degree to which external evidence should be taken into consideration. The EBP model implies high standing for providers to evaluate and apply research evidence in decisions about individual patients (Haynes et al. 2002a). However, the organizational context introduces other stakeholders and EBP interventions, which may conflict with this role for individual providers. Stakeholder beliefs or organizational interventions may imply different degrees of providers' standing to evaluate evidence both individually (i.e., as opposed to accepting the conclusions of external bodies) as well as relative to other internal stakeholders who also evaluate evidence (e.g., organization administrators in setting local standards).

2.1.1. Provider standing to evaluate evidence

In practice, respondents identified a variety of approaches to EBP based on views about the degree of provider standing to evaluate evidence as well as beliefs about the relevance of external evidence in the context (Table 6.1). EBP is often presented as a tension between provider standing and expertise on the one hand and external evidence primacy on the other, which would suggest that the debate about EBP represents a tradeoff between the lower left ('cookbook medicine') and upper right ('provider expertise takes precedence') elements. But provider standing and external evidence are not always in tension. Indeed, the EBP model in theory most resembles the High Provider Autonomy-High External Evidence Reliance quadrant, suggesting that rather than being in tension, EBP depends on providers with high standing to evaluate evidence interpreting and applying highly relevant evidence. Respondents described multiple examples where this use of both provider standing to interpret evidence and high reliance on that evidence coexist. EBP proponents tend to frame critics' "misperceptions" of EBP in terms of the lower left quadrant (algorithmic application of the evidence), suggesting instead that EBP in theory should resemble the upper left quadrant. In cases where providers have high standing and external sources have low relevance for the local setting (upper right quadrant), *local knowledge and expertise* take precedence. Respondents endorsing this view believe that external evidence is less valid for the context at hand and external observers less knowledgeable about the local context; local expertise is authoritative.

	External Evidence – High Reliance	External Evidence – Low Reliance
Provider Standing – High	**"EBP Decision-Making Model"** *Providers interact with external evidence* *e.g.,* Family Medicine decision-making model; scientist-practitioners follow *and adapt* specific EBTs; University Medical Center guidelines (to support providers in countering decision fatigue)	**"Provider Expertise"** *Clinician expertise, organizational standards take precedence* *e.g.,* Use of supportive therapy rather than EBTs
Provider Standing – Low	**"Cookbook Medicine"** *External evidence takes precedence, algorithmic application* *e.g.,* Priority for specific EBTs, external guidelines with fidelity	**"Local Standards"** *Organizational standards take precedence* *e.g.,* initial Dept. of Psych. Benzodiazepine policy (to set org. standards for use tailored to local setting)

But the EBP examples described in Table 6.1 also suggest differences in who has the standing to evaluate evidence, and demonstrate the organization administrator's stake in interpreting evidence to set organization-level prescriptive standards. Most administrators in this study had prior clinical expertise (and often expertise in research and EBP) that qualified them to evaluate research evidence in light of clinical questions and claim standing to set organizational standards beyond the qualification of a pure manager. Indeed, the examples in Table 6.1 demonstrate organization administrators' involvement in interpreting evidence, setting local standards or policy both when providers have high and low standing.

2.1.2. Provider and administrator standing to evaluate evidence

Stakeholders therefore also varied in their views of who has standing to interpret and evaluate evidence. In particular, I find that views about provider vs. administrator standing to evaluate evidence matter in the EBP forms that respondents endorse and the design of organizational EBP activities (Table 6.2). These two standing sources are *not* mutually exclusive. While administrators may claim standing to interpret evidence and design local standards that individual providers are expected to comply with in carrying out EBP, they often view this role as cooperative, facilitating individual providers in conducting EBP.

When both provider and administrator standing are high the organization plays the role of facilitating providers' use of EBP. This approach may take the form of providing information sources, even in the form of nudges, that make it easier for providers to conduct EBP, for example by providing access to point of care information and facilitating its use (Dept. of Family Medicine) or providing and facilitating the use of default guidelines or treatments (University Medical Center) aimed at reducing "decision fatigue" and making it easier for providers to make evidence-based decisions. This approach may also take the form of co-creation of local standards based loosely on external evidence. One substance abuse clinic director described how he co-created a treatment manual with providers, informed by a number of existing Evidence-Based Treatments but tailored to the organization. He considered the treatment a "living organism," and regularly held meetings with providers to jointly adapt the treatment based on

their experiences and needs. In this case, both administrators and providers had high standing to evaluate evidence and clinical knowledge.

When provider standing is high and administrator standing is low, providers make individual EBP decisions with little direction from the organization. This view aligns with the theoretical EBP decision-making model, which encourages individual provider use of evidence and does not provide an explicit organizational role. The Department of Internal Medicine colorectal cancer screening practice initially followed this approach, as individual providers familiarized themselves with guidelines and carried them out in the absence of explicit organizational direction.

When administrator standing is high and provider standing is low, the administrator interprets the evidence and sets standards for the organization, which providers are expected to carry out. For example, the Department of Psychiatry Outpatient Clinic Chief initially developed a policy limiting benzodiazepine use based on his own experience and reading of external evidence, expecting providers to carry out what seemed to him to be a sensible policy. However, he adapted the policy after pushback from providers who wanted to ensure stability for their current patients. Similarly, the Multi-State Network program to develop guidelines for PTSD was based on administrator expertise and a centralized evidence review and guideline development process. While providers were educated in the specific EBTs included in the guidelines and encouraged to use them, they were not expected to have the time or need to review the evidence themselves.

Finally, when both provider and administrator standing are low, external evidence is treated as 'black box' and prescriptive, and providers follow practices that are considered to be "evidence-based" without reviewing the underlying evidence themselves. One nurse practitioner and quality improvement specialist remarked how "Evidence-Based Practice is always changing," and gave the example of hormone therapy for menopausal symptoms, noting that it was once recommended as evidence-based and then called into question.

Table 6.2. Observed uses of external evidence by levels of provider and administrator standing.

	Administrator Standing – High	**Administrator Standing – Low**
Provider Standing – High	*Organization facilitates individual EBP, 'nudges'* e.g., University Medical Center local guideline development; Dept. of Family Medicine facilitation of EBP *Co-design of local standards, treatments* e.g., Substance Abuse Clinic local treatment manual	*Providers make individual EBP decisions* e.g., Theoretical EBP decision-making model; initial Dept. of Internal Medicine colorectal cancer screening practice
Provider Standing – Low	*Administrator interprets evidence and sets standards for organization* e.g., Multi-State Network guideline development for PTSD; initial Dept. of Psych. Benzodiazepine policy	*Providers follow "the evidence," external standards drive practice* e.g., "Evidence-Based Practice is always changing" re hormone therapy

When external evidence is considered completely irrelevant, this would be non-use of EBP, and I did not observe any stakeholders who endorsed a pure anti-EBP position. This tacit acknowledgement of the relevance of external evidence and the EBP model supports Dopson and colleagues' (2003:322) observation that even critics of EBP now use the language of EBP (e.g., critiquing the quality of evidence for specific interventions) to argue against specific initiatives.

2.2. Social drivers of variation in standing

Provider and administrator views about who can and should evaluate and interpret evidence is inherently a question of social roles and interactions. Stakeholders have a wide variety of views about their own standing to evaluate and interpret evidence in practice as well as that of their colleagues and other stakeholder groups. Further, they use evidence in a range of ways, including not only in their clinical decision-making under EBP but in their interactions with other stakeholders. Within an organizational context, the relationship between external evidence, organizational standards, and provider discretion reflects the roles researchers, administrators, and providers play and their relative standing to interpret and apply information. How they negotiate these roles and determine who uses evidence and in what ways drives much of what it means to conduct EBP in a given context.

2.2.1. Low provider standing

Despite claiming to conduct EBP, many providers did not actively seek or use standing to interpret evidence. For them, EBP was more closely related to the output—which treatments or resources they used and whether those were broadly considered to be evidence-based—rather than the process of consulting and interpreting low-level evidence. This effect occurred both actively, by renouncing the standing to evaluate evidence as part of their work, or through the passive use of evidence-based recommendations without interpreting their source. The organizational trends identified above are driven by three sub-themes on the individual level: (1) renouncing standing to interpret evidence (2) uncritical use of the evidence and (3) administrator standing claims.

2.2.1.1. Renouncing standing

Many providers actively renounced standing to interpret evidence, contrary to the original model of EBP advocating active consultation of the evidence in addressing clinical issues. These providers viewed the act of consulting and interpreting evidence as peripheral to their core role of providing clinical care, and they were content to be told what the evidence says and, in some cases, how to use it (thereby also leading to lower autonomy). Some of these providers were confident in their ability to interpret evidence but actively chose not to do so for most day-to-day work; others expressed disinterest in interpreting and evaluating evidence, perceiving this practice as less relevant for their clinical role. As a result, these providers have lower standing to debate a particular clinical practice on the merits of the evidence but rather on whether or not an evidence-based approach is applicable to the clinical situation.

Many providers I interviewed were disinterested in learning to evaluate evidence, particularly those that associated EBP with specific EBTs or resources rather than a decision-making model. They were not deeply interested in, nor necessarily felt comfortable with, evaluating evidence, though they were able to maintain a pro-EBP outlook via the use of general heuristics about treatment or the use of specific EBP resources (e.g., guidelines, third party resources) or EBTs. In these cases, providers willingly appealed to others' expertise in evaluating evidence and to benefit from the support of "the evidence" for their clinical activity without directly engaging with the evidence themselves.

For example, a psychiatry resident noted that she did not enjoy consulting research and would prefer that she just be told (e.g., by the organization or a professional society) "what works." For her, reading the research is a peripheral task that does not contribute directly to her identity as a provider.

> Oh, yea so I'm not a huge fan of research … You know I read the articles and I'm like you know just tell me [laughs], tell me what works and what doesn't work.

Similarly, some practitioners were willing to cede standing to external experts and follow guidelines algorithmically, believing that those experts are better positioned to interpret the evidence

than the provider. For example, an Internal Medicine resident believed in the expertise of those who formulate guidelines, such that he doesn't need to evaluate the evidence himself, nor question the process of guideline formation:

> There are guidelines formulated by some panel of experts who have a gigantic comprehensive body of primary literature evidence about how fast colon cancers grow, I can't tell you all those clinical trials that led them to make that decision. But the fifty years old, every ten years for normal risk patients, that's certainly, that's something I know is the clinical practice in this country.

In other cases, especially when EBP is framed as a decision-making model, providers are trained in evaluating evidence, but they elect not to read individual articles, because to them it is not a requisite part of everyday clinical practice. In both cases, the provider chooses not to actively conduct the peripheral task of consulting evidence, but in this latter case, they explicitly state this strategy.

The Family Medicine Residency Director believed that residents needed to learn the core skills to evaluate research, but then optimize their workflow by recognizing that they did not need to use those skills or types of information in daily practice.

> There's also an Evidence-Based Medicine, Information Mastery portion of that curriculum where we talk about the concepts ... How do you do critical appraisal of the literature, and then recognize that there's no possible way that you can do critical appraisal of the literature, you need to respect that and pay somebody to do that for you [laughs]? Because there's way too much that comes out too quickly, you need a system to follow that.

In this approach, providers actively used broad information sources and only went deep when they needed to. Providers in the Family Medicine department learned the capacity to evaluate research articles but also were taught that doing so in daily practice would typical be unadvisable. As one attending physician noted:

> I had to learn in medical school and also a little bit during residency about how to interpret level of evidence, but I feel pretty comfortable using those resources [like Dynamed], I'm not so comfortable with other resources for looking up levels of evidence. I don't typically look up papers myself unless it's something super rare [laughs], then I'm like okay well, there might be a paragraph in Dynamed, but I want to read the paper that it was actually based on, then I'll click on the link that they provide, and look at the actual paper myself.

2.2.1.2. Uncritical use of evidence

Providers also cede standing unintentionally through the uncritical use of terms like "the evidence," treating the research evidence as a prescriptive, 'black-box' body of knowledge to be followed rather than a source of dynamic, incomplete, and often conflicting sources of information to be evaluated and interpreted. This prescriptive view of evidence inherently places the provider in a passive role and treats "the evidence" as an active agent in prescribing clinical activity.

For example, the psychology resident above renounced the standing to evaluate evidence, in appealing to "the evidence" just to tell her what works and what does not work. Here there is little question of what it means to actually evaluate the evidence; in the resident's view that type of task is peripheral to the provider's role, and rather the responsibility is discharged to other stakeholders (i.e., researchers, administrators) to compile the body of evidence about the clinical issue and prescribe recommendations.

Similarly, an Internal Medicine resident prioritized external evidence over clinical experience or the expertise of trusted colleagues, but relied on others to identify the studies or other artifacts that determine "why we think things are facts".

I really like taking evidence into [account], I really like it when I know why I think something is beneficial or not, because you know there are some people who just are very comfortable thinking they know things based on experience or thinking because someone told them once that they trusted. I love knowing why we think things are facts, that we can cite, this is the study, this is why we think that we should be doing this versus that and stuff.

As a result, he gained the credibility associated with "the study" that supports the clinical action he chose to take, but without actively evaluating the evidence himself; the important studies are indicated by some authoritative expert who evaluates the evidence.

Similarly, a nurse practitioner and quality improvement specialist took a passive view of evaluation of "the evidence," describing the organization's role as:

Making sure everybody has what's currently out there, what's currently working, what people have tried, because Evidence-Based Practice is always changing, right? So clinical practice lags the evidence by ten years, clinically. That's the historical data out there. Anything in the research world takes ten years to get to the clinical world.

In this view, EBP is dictated by research evidence, putting the provider in a position in which they must adapt to changes pushed to the practice setting from the research domain. If the research develops, the provider is expected to take these changes into account, though these changes would paradoxically indicate an area of unresolved clinical science.

In another case, a clinical psychology researcher remarked that her PhD program was EBP-focused. However, because this focus was based on learning specific EBTs, providers did not learn to interpret the evidence and she was surprised when she did so and found the underlying data insufficient. But the emphasis in the program was to treat the evidence as unitary, without "go[ing] into the literature" oneself.

I was off to actually either review a manuscript or write like a small chapter or something innocuous, and I had to, for that reason, go into the literature for the first time and actually start reading some of these studies. And this is important because I think until then I'd had the same kind of narrative that everyone else had had. Because as a grad student, I mean who has time to read the synthesis of all these studies … So I didn't, and I'm guessing of course no one else does unless they have a job such as a postdoc requiring them to do it.

In both theory and practice, there are valid reasons for providers to discharge responsibility to evaluate the evidence. However, using "the evidence" as a prescriptive actor creates the effect that providers implicitly delegate their evidence evaluation role without recognizing the nuance and conflict in the evidence. This implicit delegation of role creates a standing claim for other stakeholders, particularly researchers and administrators, to evaluate the evidence and prescribe its implications for clinical practice.

2.2.1.3. Administrator standing claims

Administrators often claim standing, evaluating the evidence themselves to design EBP programs and set local standards, guidelines, policies around specific treatments or evidence resources. This role is especially taken up by those administrators with clinical experience and professional standing to interpret evidence. As demonstrated in Table 6.2, they may do so in ways that complement or compete with provider standing.

Respondents also frequently discussed the standing of other stakeholders, including their immediate colleagues as well as other stakeholder groups. In many cases, these exchanges are positive: residents and attending physicians both discussed the joint learning from one another. Multiple attending

physicians noted the benefits to residents of being able to dig into the research literature and also the fact that residents would keep them up to date.

Administrators and researchers occasionally viewed their role as setting organizational standards in order to limit individual providers' need to engage directly with the evidence. For example, one mental health administrator in the Multi-State Network exclaimed "Who has the time to read journal articles when you have notes to complete!"

Respondents had different perceptions of just how EBP should be applied, in particular with respect to what constitutes sufficiently rigorous or satisfactory material. For example, the leader of the guideline development program at the Regional Network emphasized the importance of having sufficient and sufficiently rigorous evidence to base regional policies on. He also noted that he preferred developing guidelines locally not because of the local patient population but because he did not think national professional society guidelines were always "right," that they were subject to bias through financial incentives, or that they might not be "rigorous enough," calling into question the standing of the national professional societies. He therefore challenged the standing of external guideline developers and preferred his own standing claims:

> What we find is most of the time [society guideline developers are] right, but not always, and they get influenced by fee for service thinking or vendors or sometimes the evidence is simply ambiguous, and they're not being rigorous enough as much as we would, so.

Similarly, one researcher who was involved in multiple national guideline development programs commented on others' standing in the guideline development process, noting that the development process is subject to highly social phenomena, including domineering and persuasion.

> And for people who graduate in the practice now, they tend to be very oriented toward authority. That gets us through our pre-medical days, it's very helpful in medical school and as a resident, you listen to authority. But that authority, I've been in the smoke-filled rooms when those things are written. And you find out that a lot of what looks like authority is really who yelled or whined the loudest or the longest.

That view contrasts with another local guideline development project. As the University Medical Center developed an initiative to create local guidelines, the medical director noted that in any guideline, bias would exist and that the choice of guideline is effectively a choice of which bias the user is willing to accept. The organization chose to evaluate existing national society guidelines, in order to recommend one that was most appropriate for their patient population. Whereas the Regional Network guideline developer called national guideline developers' standing into question because of outside influence or insufficient "rigor," preferring to conduct such evaluation in house, the University Medical Center Medical Director accepted the validity of external guidelines, and the standing of external stakeholders, selecting among rather than refuting external guidelines.

> What we should do as an organization is say okay we're going to look at those four things, OB/GYN, AAFP, American Cancer Society and USPTF. Let's look at those four things, see where they're different, and then say which one of these would make the most sense on the balance for our entire population of people we have here at [University Medical] that we serve. Pick one, ask people to stick with it, and if they're not going to stick with it, they have to document why they're not sticking with it.

Administrator standing is a powerful signal for providers, determining what constitutes a standard of care at the organization. An administrator in the Multi-State Network promoted a training session in Eye Movement Desensitization and Reprocessing (EMDR), an EBT that he did not himself believe is effective. He questioned the external evidence and the capacity of the trainer to evaluate that evidence,

but ultimately acknowledged the treatment's validity because a colleague he considered authoritative is "a big believer" in it. He established a training program for his providers, which he claimed to support, but ultimately undermined by sending an adverse signal to his providers based on his standing as organizational administrator.

> Leader bias is really important – I'll tell you a story – when I was clinic chief, I was not a big fan of EMDR – I think its goofy to do EMDR. (name redacted) is a big believer in EMDR, so I think there may be some validity to the approach. But anyway – this is a couple of years ago, we were getting all the providers trained in the Big 3 – PE/CPT/EMDR. I was attending the training with my providers to show that I wanted them to do EBTs. The problem was that the person doing the training was a [Licensed Marriage and Family Therapist] who didn't really understand the research that was being cited. I kept pointing it out because I didn't want my team to get snowed. At lunch break, the head instructor pulled me aside and said, "you don't really have to come back for the post lunch session – it feels like you really don't believe in EMDR"

Finally, one mental health administrator remarked that the standards for evidence and preference for rigorous research methods drive the types of Evidence-Based Treatments (EBTs) that are available because of the preferences in different communities for pursuing research on the treatment methods.

> There is a bias in how we define EBP – the people who do behavioral approaches are research based – they have done the studies to show that their treatment approach works. The ones trained in psychodynamics see it more as an art – they don't trust the measures that are capturing outcomes – it's really the therapeutic relationship and the art of psychotherapy that they are focused on. The treatments themselves may actually work but they don't have the research data to support the treatments.

2.2.2. High provider standing to evaluate evidence

Other providers claimed or were accorded high standing to evaluate evidence. In some cases, they did so by engaging with research evidence in making decisions, in line with the theoretical model, within organizations that reinforced doing so as part of the provider role. In other cases, providers used evidence demonstratively, claiming standing by conspicuously presenting themselves to colleagues as well-informed, 'evidence-based' providers.

2.2.2.1. EBP as decision-making

As described in Chapter 4, organizations and collegial groups strongly influenced individual providers' understanding of EBP. Many organizations, particularly those that framed EBP as a decision-making process, reinforced providers' capacity and role to actively engage with and interpret research evidence in clinical decision-making.

When EBP was used as an individual-level decision-making model, providers accordingly maintained standing to evaluate evidence and arrive at an informed clinical decision. Indeed, this use is consistent with the theoretical model of EBP, and it is what EBP proponents assume is conducted when discussing or advocating EBP – but the departures from the EBP model described here, including other stakeholders and uses of evidence within the organization, underscored how unusual this use of evidence in the organization is.

2.2.2.2. Demonstrative EBP to claim legitimacy

Many stakeholders used evidence to claim standing in conspicuous, demonstrative ways, using EBP either to be perceived by others as expert in the research evidence and use of EBP, or to justify and gain support for their chosen course of clinical action. As one provider remarked, "no one wants to say that they're not doing Evidence-Based Practice."

These demonstrative acts arise in individual provider interactions, interactions with patients, and administrative and research settings such as organizational decision-making about EBP policy and guideline development. These acts underscore the social aspects of EBP and the use of evidence not just to develop ideas about clinical practice but to claim expertise in social interactions.

<u>Claiming expertise</u>

For example, one Internal Medicine resident described how EBP can be used in individual rounds as a demonstrative act to raise one's standing with attending physicians, demonstrating that the resident is reading, choosing sophisticated, rigorous supporting material for their decisions, and ultimately creating more support for their chosen course of action:

> Resident: When you're on the wards on rounds and you're trying to decide what's going on or what you're going to do, you might go and do some back research with down time and come in with, you know, hey I've gotten some, there's some evidence on this weird or rare thing and this other course of treatment or something like that. And dropping a paper on the table is kind of like oh okay.
> Interviewer: A little trump card [laughs]
> Resident: Yea yea exactly. Dropping a citation in your notes or something like that is, you always do that as a med student to impress people and show them that you're reading [laughs]. But definitely it's got a certain currency to it.

The resident underscored how this performative practice was common at medical school, which is unsurprising given the emphasis in the EBP curriculum at medical schools on learning what constitutes sufficiently rigorous evidence and the legitimization that medical students seek within that inherently didactic environment.

The demonstrative use of EBP also factored into the stories providers told of professional colleagues, including at other sites, where they believed it was expected that providers cite sources to substantiate their chosen course of action. The same resident described a prestigious academic medical center where he believed this to be the case. He described his belief that it would not be acceptable to use third party reference tools to support a clinical decision, but that individual, high quality research citations would take precedence in that environment. As a result, he described the surprising view that it would appear more rigorous to pick a single article from the sources in the UpToDate summary than to cite the full summary itself:

> I feel like I've gotten the impression, at [a prestigious institution], which is an extremely elite program and has its own personality and just has its own types of people who are there, I've had people say, oh you never say what UpToDate says on rounds. Like if you were trying to present your case, you would just quote an article, a primary source of literature. Whereas I think some institutions like here, you know if you say what UpToDate says, that's one of our big clinical references. That wouldn't be looked at as taking the shortcut or something like that.

<u>Gaining support for a desired course of action</u>

Stakeholders also use evidence as a persuasion tool to advocate for a course of action. This tendency was evident in some of the examples above, as individuals used EBP consistently to gain legitimacy, but also came about strategically in one-off negotiations. In some cases, respondents suggested that they sought evidence to support a pre-determined course of action, flipping the role of evidence from identifying and evaluating potential alternatives to confirming and communicating chosen approaches.

For example, one respondent, a quality improvement specialist, did not have a clinical background. Nevertheless, in her new role, she regularly communicated with neurologists. She found that

they responded to evidence and therefore she learned the habit of consulting and citing evidence to communicate with them. This was not previously a requirement for her position and was not how she communicated with quality improvement colleagues, but it became a standard that she realized would provide her credibility in dealing with her medical counterparts:

> So I will say that before coming [here], I was never in a role where I had to go out and do the research myself, or even thought of that. But working with neurosurgeons, I've learned that they want to know what the data says, what's the best practice, you know? So I've gotten into the practice of looking up and doing research on my own, so that way I can research questions, so when they ask, well what does the data say, or why would this work versus that, and I say well you know there are a couple studies published.

EBP serves both informational and performative roles, which is especially evident when stakeholders describe how different types of evidence relate. For example, in the Internal Medicine department, residents learned the skills to evaluate and interpret individual research studies, especially RCTs, and as a result perceived it as more desirable to read and cite evidence directly, the more rigorous the better. Individual research articles were used to this end because they are considered especially rigorous relative to more convenient sources. One resident described how professional societies and journals produce guidelines or practice-oriented reviews, but that the ideal for clinical practice would be to read individual research articles from the primary literature:

> Yea there's like I think there are either society guidelines or there are like specific articles like JAMA has this like clinical practice section I don't know exactly what it's called, but they usually have pretty good [guidance] but that definitely just takes more time, but ideally you'd go to the primary literature, I guess, so…

This perception is particularly counterintuitive because the society guidelines or JAMA practice-oriented recommendations, from an evidence hierarchy perspective, are more reputable, stronger evidence than primary literature because they represent accumulated knowledge from multiple individual studies.

2.2.3. Standing Claims and the EBP Model

The sections above describe three departures from the theoretical model of EBP driven by the social interactions related to standing that arise when EBP is carried out in organizational settings. Providers renounce the standing to interpret research evidence in favor of more algorithmic evidence resources, providers conduct EBP demonstratively to gain the social and professional benefits associated with its perceived rigor and authority, and administrators claim standing to interpret evidence and prescribe clinical action. What are the effects of these departures?

These departures from EBP theory are able to arise within the social setting because stakeholders' conceptualizations of the EBP model is incomplete (i.e., they refer to a narrow mental model rather than the full theoretical model). As they work out a tacit understanding of the concept in practice and among colleagues, as Gabbay and le May (2004) found specifically with regard to clinical practice guidelines, stakeholders are able to claim the term "EBP" for themselves or their organization, even while performing practices that may not resemble the theoretical model. This may have negative effects: those who renounce standing to evaluate evidence can claim to be doing EBP just by following canonical examples of "the evidence" though they may be unclear about the source and applicability for the approach, making it no better than the intuition-based approach EBP was intended to replace. Those who use evidence demonstratively to claim rigor (e.g., by citing a single journal article) may base treatment decisions on incomplete science by not taking into account the full context of the study. Those administrators who

encourage adherence to their own standard may discourage clinicians from seeking and applying alternatives that may benefit individual patients more.

But these social phenomena also have positive effects on care that are not fully captured when understanding EBP simply as an individual decision-making model. Those who renounce standing to evaluate the evidence leave this complex and time-consuming task to researchers and guideline developers (including local administrators and research colleagues) who specialize in it. This approach to literature review was quickly identified by EBP proponents in response to the time constraints, allowing providers to consult a minimum amount of evidence more often. There have also been calls to integrate guideline use and EBP even further (Eddy 2005). But little is known about how local guideline development and research expertise fit. Those who use EBP demonstratively generate and sustain a culture of EBP in their organization, share good clinical practices with colleagues, and promote dissemination and discussion of specific treatments and their applicability. Administrators who evaluate evidence and set standards similarly generate and sustain a culture of EBP in the organization and ensure that providers with less time or skill in EBP are aware of specific EBTs. Table 6.3 describes the positive and negative effects of these social phenomena.

Table 6.3. Deviations from EBP theory based on social phenomena related to stakeholders' standing to evaluate evidence.

Evidence evaluation standing practice	How it arises	Positive Effects Observed	Negative Effects Observed
Renouncing (Low provider standing to evaluate evidence)	Implicit or explicit choice not to actively interpret evidence	Learning how to evaluate evidence and then delegating task because it is not central, in order to consult a minimum amount of aggregate evidence more often (e.g., Dept. of FM)	Treating evidence as a black box, e.g., via passive reference to "the evidence" as a prescriptive body of knowledge without critical thinking of how to interpret and apply.
Demonstrative (High provider standing to evaluate evidence)	Performative use of evidence and EBP to persuade colleagues, or to gain status or legitimacy by being seen as an "EBP" practitioner	Generates/sustains culture of EBP, opportunities for providers to share resources and to communicate good clinical practices and standards for use of evidence (e.g., sharing high quality RCT article in the Dept. of Psych.)	Drives providers to use "rigorous" evidence resources in a way that may lead to incomplete use of evidence or reliance on uncertain science (e.g., individual research studies rather than guidelines, systematic reviews)
Administrative standing (High or low provider standing to evaluate evidence)	Administrator sets local standards based on own reading of evidence or past clinical expertise.	Local guidelines reduce adverse practice variation, benefit from administrator's clinical expertise in setting organizational priorities, economies of scale in evidence evaluation (e.g., University Medical Center guideline development program)	Potential for conflict among stakeholder groups in interpretation of evidence, use of specific clinical practices

3. <u>Provider Autonomy</u>

EBP has been closely linked to professional autonomy since its inception. EBP is often perceived as a threat to autonomy (Cohen et al. 2004). Proponents argue that this threat is a "misperception," and that EBP, when conducted as intended, does not constrain provider autonomy (Haynes et al. 2002b). I observed administrators and researchers who were keenly aware of provider perceptions about EBP and autonomy, and who believed provider desires for autonomy were a barrier to their EBP initiative intentions. How can these views be reconciled, and what is the relationship between EBP and autonomy?

I argue that it is EBP *as instantiated* in the organizational context that creates the potential to constrain provider autonomy, depending on how it is implemented by the organization. This organizational initiative includes both what gets implemented as EBP, i.e., the EBP intervention, and how it is implemented, i.e., the implementation method. The organizational intervention affects provider autonomy because, as demonstrated in Chapter 5, the approach to EBP chosen by the organization may be narrower than the theoretical EBP model and therefore may introduce some of the constraints on autonomy that the theoretical model of EBP avoids. The implementation method affects provider autonomy much like standard organizational or bureaucratic interventions do: formal policies, educational initiatives, and guidelines, for example, have different implications for providers' professional autonomy.

Claims to evaluation standing provide a mechanism by which EBP in an organizational setting may constrain provider autonomy. The introduction of the administrator's stake, and the administrator's status as a hybrid professional-manager (Kuhlmann et al. 2013) affords administrators the legitimacy not only to establish organizational processes (as a manager) but also to evaluate evidence (as a professional). Autonomy is often framed as inherently in tension with organizational control, and administrators must navigate this tension to satisfy professionals' desire for autonomy while ensuring organizational goals (Langfred and Rockmann 2016). The effect of the administrator's stake to evaluate evidence and design EBP initiatives accordingly on the EBP-autonomy relationship has not yet been fully understood.

3.1. Designing EBP programs to achieve desired levels of autonomy

I find that administrators rely on EBP to achieve a wide range of organizational goals and adjust implementation methods accordingly to achieve a desirable level of autonomy (Table 6.4).

Table 6.4. Organizational EBP goals and effects on provider autonomy

Organizational Goal	Effect on Provider Autonomy
Providing information resources to providers	High provider autonomy, organization serves facilitating role
Setting defaults, nudging providers	High provider autonomy, but organization plays more active role in selection of EBP innovations, guiding autonomous providers to specific action
Reducing unwarranted practice variation	Lower provider autonomy, provider may deviate but organizational standard is default
Ensuring patient access to specific treatments	Lower provider autonomy, provider may deviate but organizational standard is default, organizational theory of change relies on provider compliance

For example, the University Medical Center planned to develop local guidelines, using EBP to set defaults to nudge providers in the right direction, limit decision fatigue and reduce a behavioral barrier to

making the right choice. In this case the organization played a role supporting the individual practitioner to facilitate their decision-making and avoid adverse variation caused by decision fatigue associated with the many decisions the provider is involved in:

> So that's how the organization has the interplay, trying to support the individual practitioner. Because decision fatigue is a real thing, right? And if you have the seventy year old guy, I mean you have to think about the colonoscopy, and the prostate and, I don't know … is he going to have a heart attack, and does he have pre-diabetes, you know you could literally have all those things in one person in a thirty minute visit. So to the degree that we can take the decision, if the party line is we're going to follow these protocols and we can get people to agree to that, that helps with that.

An administrator at the Multi-State Network similarly described the use of documentation to ensure that providers actively think about clinical decisions and are not defaulting to comfortable approaches. The act of documenting created an additional checkpoint to encourage providers to reflect on whether an approach is the best by documenting it (Haynes et al. 2009). As the administrator notes:

> So there's various things you try to do, right, to reduce unwanted variation. So that when variation occurs you want it to be intentional and you want it to be safe. Somehow leading to high quality or however you want to phrase it. You want it to be good variation [laughs] instead of bad variation, to put it bluntly. So bad variation is laziness, you know, bad variation is, I'm just doing this because this is how I was taught when I was in grad school forty years ago, and I'm not changing, no matter what the price. That's examples of bad variance, you don't want that. So when people have to take steps to document when they're varying from a Clinical Practice Guideline, as an example, that's a discourager. So they're usually only going to want to do that, and put that in black and white, [when] at least in their mind, there's a good reason.

Administrators keenly expect providers not to like EBP when it represents a significant difference with their usual practice, and indeed this potential barrier—the "innovation-values fit"—is captured in innovation implementation models (Aarons, Hurlburt, and Horwitz 2011). But they address this expectation in different ways, particularly based on the degree of autonomy they believed providers need. For example, the University Medicine Center Medical Director underscored the importance of provider autonomy not only to benefit from providers' discretion (indeed arguing that discretion may not always be beneficial) but also to gain provider buy-in for interventions:

> It's hard to get clinicians, and in particular I would say physician clinicians to buy into that. Because the physicians highly highly value autonomy. For better or for worse. And I think in a lot of cases it's for worse.

One psychology researcher noted that the challenge of identifying appropriate use is not simply a consideration within mental health but a common theme across all EBT implementation initiatives:

> You know, what's fascinating to me is that when you look at implementing Evidence-Based Treatments, not just for mental health, but when you look across the board, all of the providers are saying the same, have the same resistance to Evidence-Based Treatments, that idea that my patients are too complex, it's going to take away from my autonomy and my own decision-making abilities. So I think it's interesting to hear across fields, across disciplines, that the providers have the same concerns about Evidence-Based Treatments.

EBP initiatives often reflected a conscious decision on the part of organization administrators to design and standardize EBP approaches at the organizational level, relying on their own standing to interpret the evidence and set a clinical standard. They do so not only out of concerns about the uniqueness of the population (and the generalizability of the evidence to that setting) but also due to the

belief that the external evidence is insufficient or biased. So rather than have providers interpret external evidence directly, the organization created local guidelines or EBT directives. Some administrators perceived this tailoring as preferable to external guidelines, but this internal process typically is not subject to the same level of scrutiny that external guidelines now tend to be, including the use of formal 'Guidelines for guidelines,' and systematic evidence review and consensus development strategies (Department of Veterans Affairs & Department of Defense 2019; Institute of Medicine 2011).

3.2. The "Art and Science" of clinical practice – a part of EBP or the exception to EBP?

Stakeholders regularly appeal to the "art and science" of professional practice as a justification for professional discretion, which is a common refrain in the professional literature (Abbott 1988; Freidson 1988; Martimianakis, Maniate, and Hodges 2009). Many respondents talk about the "art" and "science" of treatment decision-making, appealing to the provider's specialized knowledge and the unique complexities of individual patient cases as an argument against overly prescriptive organizational policies based on systematized knowledge. Respondents appealed to the "art and science" of both EBP and clinical practice writ large, referring both to providers' professional capacity to recognize when a specific course of action does not apply and to aspects of clinical practice that they consider interpersonal and beyond the scope of evidence.

Schön (2017) describes such claims as an effect of the "mismatch" between traditional knowledge in the professions and the complexity of the practice setting, noting that in response to these gaps, professionals demonstrate "reflection-in-action," tacit knowledge (as artistry) in practice, and that problem framing is as specialized as solving a problem as presented. Similarly, Seron and Silbey (2009:106) note that application to all practice situations, even familiar ones, is interpretive (i.e., an evaluation of external validity): "Every application of formal or technical knowledge to an empirical situation is therefore an interpretive act, fraught with ambiguity, calling for discretionary judgment," drawing from Abbott's (1988) description of professionalism as situational diagnosis, inference, and treatment.

In terms of EBP, while many respondents endorsed the "art and science" of EBP practice, they differed in scope. For some respondents, art, i.e., professional clinical discretion, was considered a part of EBP, even of specific EBTs. For others, the "art and science of clinical practice" was a reason for deviating from EBP. For them, EBP entailed following evidence-prescribed clinical practices, and in conducting the "art and science" of clinical practice, clinicians determined when and how to deviate from EBP. That is, for some stakeholders, professional discretion occurred within the scope of EBP, and for others, professional discretion was considered external to EBP. This is a semantic question, in terms of whether the term EBP encompasses the professional discretion stakeholders generally agree providers should have, but these views may affect how administrators design EBP interventions and how providers accept them. As a result, EBP does not directly affect autonomy – actors have a general idea of the levels of professional autonomy and discretion they believe providers should have and act to enable it either internally or externally to EBP; belief in the "art and science" of clinical practice writ large therefore mediates the effect of EBP on autonomy.

One Family Medicine attending physician described the art and science of medicine as a limit to standardization, highlighting the situations where a provider's professional knowledge indicates that they should "bend the rules a bit." Notably, she describes this discretion as external to Evidence-Based Medicine, suggesting that it is not "the only way" to practice and a provider should be aware when not to use it:

But medicine is called the *art of medicine* for a reason. There are a lot of nuances and there are times that we have to stray away from Evidence-Based Medicine. Because we have to really look at the patient. Evidence-Based Medicine is a great way to practice medicine, but if people think that is the only way, they could really put their patients in harm's way. Because it doesn't allow you, if you only practice Evidence-Based Medicine, it's based on numbers. It's not based exactly on, it's not an exact science on people and the way people's bodies react. … So that's where the practice of medicine comes in, and the art of medicine comes in. How do you practice Evidence-Based Medicine and stay along with general guidelines, and where do you steer away, and when do you bend the rules a little bit? (emphasis added)

Similarly, a clinical administrator described how the "art and science" of *medicine*, writ large (as opposed to within EBP), allows providers to identify the limits of scientifically proven treatments:

So we talk about the *art and science of medicine.* They come to us with science, science, science, and we're like, yea but there's art here and let me tell you, in my clinical experience of x number of years, this would not be the right medicine for you. (emphasis added)

A Family Medicine resident similarly noted that the "art of *medicine*" is closely linked to the provider's identity and their "creative" contribution:

I think that's why for me it has to do a lot with personality, and again that's [what] I think is the the most creative part of medicine. I mean that's probably the part I like the most. I call it *the art of medicine*, when you become your person, that you create your intuition, within all your clinical knowledge, but you're also able to really consolidate all that information, in the most layman's terms that you can. (emphasis added)

On the other hand, other respondents viewed the "art and science" as a part of *specific Evidence-Based Treatments*, suggesting that they view discretion as a component of EBP rather than deviation from it. One clinical psychology researcher described the "art" of therapy within the context of manualized EBTs, specific therapies that follow a pre-determined, empirically tested treatment manual. The researcher believed that clinicians "don't understand" manualized EBTs and consequently fear that they would be be overly constraining or rote, without the professional discretion to adapt them.

I think people don't understand Evidence-Based therapy. And they don't understand, you know if you've got a manual, they think--cookie cutter, they think I can't individualize it for my patients, they think no that won't work for my complicated patients. And what it means to me is they just don't understand. I mean I call this the *art and the science of protocol therapy*. And every single one of our patients received a very individualized plan that's just for them. (emphasis added)

In emphasizing that manualized "protocol therapy" incorporates art and science, the researcher consequently supported broader use of EBP than those who believed that discretion and individualization were external to EBP.

Therefore, regardless of the EBP model and views about provider evidence evaluation standing that administrators ascribe to, they build in considerable room for provider autonomy. However, debating where this discretion arises (e.g., within the scope of specific treatments, within the scope of EBP, or outside of EBP but within the scope of medical practice) obscures their ability to reconcile appropriate levels of discretion with others who may adhere to discretion within a different scope.

4. Identity

Finally, the relationship between EBP and provider identity is also complex. Historically, EBP has been framed in close relation to provider identity: in the original article presenting the concept it was

considered a paradigm shift in the training of residents, creating a new kind of medical professional (e.g., Borntrager et al. 2015; Cook et al. 2013; Tracy et al. 2003). I use *provider identity* to refer to any statements regarding what it means to be a provider or, given the EBP focus of this study, how their clinical knowledge contributes to their view of themselves as a provider. Provider identity is closely tied to their specialty or profession; efforts to tie EBP to professional identity has been a strategy used to promote EBP (Rousseau and Gunia 2016).

Whereas previous articles describe EBP sentiment as tied to provider autonomy (i.e., that EBP is perceived to constrain provider autonomy to conducting 'cookie cutter' care), I argue that instead it is driven by the congruence between the EBP form the stakeholder ascribes to, its implications for autonomy and standing, and the predominant EBP activities or EBP form in their setting. Even many of those who cede standing to evaluate evidence or autonomy to make clinical decisions maintain positive identity as an EBP provider. Rather, within their organizations they are able to maintain a form of EBP that is consistent with their identity as providers and maintain positive valence about EBP despite ceding autonomy. I find that framing EBP as closely aligned with decision-making integrates the professional aspects into the concept, enabling respondents to internalize EBP as an integral, positive, part of the provider's professional identity.

4.1. Identifying as an EBP practitioner

In the psychology cases, I observed that provider identity was at least loosely tied to the type of treatment they provide (one may be a "psychodynamic psychotherapist" or a "CBT therapist"), and a form of EBP tied to specific treatments predominated, such that to be a "CBT therapist" was synonymous with being an 'EBP therapist,' whereas a psychodynamic psychotherapist may be viewed as non-EBP.

For example, one CBT researcher in the Department of Psychiatry described herself as one of the "evidence-based people" because of her research background and CBT expertise:

So even though I'm an adult psychologist, they put me [with CBT child psychologists] because they're like we want you to be with all the evidence-based people. [laughs]

Similarly, another researcher described a conflict among backers of certain approaches and "EMDR people" in determining whether that technique constituted EBP.

These people all get angry at the EMDR people, because the EMDR people … Because they have the nerve, and it does take a certain nerve, to claim that they're making the brain do something, go into a pattern of activity that allows it to process an otherwise stuck traumatic memory. Now they don't like that theory, because there's no way to prove it. And it has never been proven. But they've never proven theirs either and there's no way to prove theirs. But they consider themselves scientists and they're offended if you say that to them.

While in practice respondents described themselves as aware of the need for discretion or openness to provider deviation from specific EBTs if they document, those with an EBT-based model occasionally disagreed on whether a specific EBT constitutes EBP and therefore how it should be incorporated into practice.

Mental health researchers advocating the use of specific manualized EBTs argued that providers resist them because they misunderstand them as a threat to autonomy and identity. As one researcher noted:

So I think that it's a little challenging because you have the cultural differences, there are just clinicians who are very science minded and clinicians who are very like, think about like the *art of therapy*, and they don't want to lose their sort of clinical judgment or decision-making. I'm not sure

how to phrase that but it's sort of the idea that if I have to do this manualized treatment it's going to take away from myself or the value of my work. But the truth is that once you know a manualized treatment, you don't apply it rigidly, because no one would ever do it [laughs]. (emphasis added)

One researcher perceived pressure in graduate school and the clinical psychology community around falling in line with an identity as an "Evidence-Based practitioner," demonstrating the extent to which providers identify with the specific treatments they select and the relationship between EBP and provider identity:

So there's this real stark disconnect, and I think the problem, you know this is where Evidence-Based Care starts to take on this almost [sighs] it's got this weird psychology around it, right? In which there's such a pressure for practitioners to be Evidence-Based practitioners, to be data driven, right? All these buzzwords. And if you're not then oh my god, you're just sort of a quack really, how dare you even see patients, if you're not doing Evidence-Based care …

One attending physician in the Department of Family Medicine described how in her previous organization, third year residents would be encouraged to pay close attention to how different organizations use EBP when applying for attending positions.

So for instance, one class, my class was looking for jobs. We generally tried to practice Evidence-Based Medicine. … And then one of the questions that we were told to ask when we're looking for potential employers is asking them around their culture of Evidence-Based Medicine. And I have heard from previous grads who are now at other practices, where they do get frustrated with some of their colleagues who are not practicing Evidence-Based Medicine, for instance getting pap smears every year on patients who don't need them. And insurance will cover it, but it's not Evidence-Based.

That EBP would be a question of employment fit underscores how cultural and social the conduct of EBP is for providers, even though in theory it is a model to guide individual providers in their own clinical practice.

4.2. Evidence as a threat to identity

Certain providers discuss the relationship between EBP and identity, but identity is separate from the questions of provider evidence evaluation standing and autonomy. These providers treat knowledge and provider identity as separate, such that they maintain a strong sense of professional identity even in ceding standing to evaluate evidence.

For example an Internal Medicine resident said he maintained a pro-evidence identity, and did not view evidence (someone else telling him what to do) as a threat to his professional identity. He defined this view in contrast to an illustration of prior generations of physicians, who he believed deeply identified with the degree of expert knowledge they could claim:

I'm pro-evidence. There's a generational thing at times, so I'm a third generation MD and so my grandfather would have just been so insulted that anyone else would have told him anything else to do about how to practice medicine [laughs]. So it's just this very macho-ish idea of what it meant to be a doctor.

Similarly, the Family Medicine Department faculty member who taught EBP intentionally separated provider identity from their authority, i.e., their knowledge about a particular clinical issue:

I tell [residents] two things. I say I want you to be able to leave and say, my favorite seven words, there's two of them. I don't know but I'll find out. Okay so that separates you, your conceptualization of yourself, from your knowledge. I am not my knowledge. I don't know but I'll

find out. Okay, being able to say that comfortably. Really, is quite a skill. And I say here's the harder one. Is saying I don't know and I don't care. That's even harder… But we have to have room for that in medicine. That's what I'm saying, that's where you have to change the whole culture, people. We may not have all the answers but we gotta start asking the right questions. And understanding the limitations of medicine. Because of the underlying insecurity we present to the world a great deal of hubris.

He believed that this separation, not "caring" about not "knowing" the answer to a particular clinical question, would enable providers to regularly consult external information and maintain the necessary perspective to appropriately apply EBP without perceiving it as a threat to identity.

Providers often tied identity to their ability to evaluate (standing) and select an appropriate course of action (autonomy), which is the traditional concern around EBP. One Internal Medicine resident noted that while guidelines are important, they do not represent the whole of clinical practice and therefore provider identity:

> I think, basically, I thought that sometimes this is the right thing to do because there are guidelines, but if there were only guidelines, we would be all like computers and there would be only a click, [laughs] right?

Provider identity also may come into conflict with the organizational responsibility for population health and the use of metrics to achieve it. The Family Medicine Residency Director underscored his belief that physicians must not let identity be an impediment to organizational measurement and accountability. Put another way, organizational requirements may constrain provider autonomy but that should not compromise their identity.

> And so this is where, I think, as physicians, we get really twitchy, that my patients are sicker and you can't tell me what quality is and you can't measure that and we get all curmudgeonly and grumpy about that. We gotta get over our damn selves. I think we have to acknowledge that we have to measure quality, now. We absolutely can and should get into the conversation of what is quality and what are metrics that matter to our patients?

Though many administrators were sensitive to the potential for providers to perceive EBP as a threat to identity, I did not observe significant sentiment against EBP itself among respondents. Particularly as EBP is increasingly incorporated into medical school and resident curricula — which form providers' understanding of what it means to be a provider – providers increasingly view EBP as a component of their professional identity. However, as demonstrated in Chapter 4, respondents disagreed with specific aspects of EBP, whether it was organization constraints on allotted time to conduct EBP, reading individual research articles or conducting journal clubs because that is how their site approached EBP, skepticism about making decisions based on a single article, or overemphasis on a specific EBT.

5. Implications for implementation

Implementation science research has typically focused on the development of descriptive and prescriptive models that address barriers and facilitators to the implementation of specific innovations, including specific EBTs and guidelines (Nilsen 2015). But innovation implementation research does not yet address how administrators set implementation goals or select salient outcome measures, despite increasing attention to outcome measurement, including measurement of fidelity, uptake, and provider awareness of the innovation (Proctor et al. 2011; see Chapter 2). Further, though implementation researchers and administrators alike all underscore the importance of discretion in use of a particular innovation (i.e., not simply maximizing outcomes along the chosen metrics), implementation models do not address what constitutes appropriate use along those measures descriptively nor prescriptively.

Further, little is known about the processes by which stakeholders reconcile competing views of appropriate EBP use in program design and implementation.

Nevertheless, as evidenced in this chapter, the important questions of what constitutes appropriate use and how to account for provider discretion in organizational EBP initiatives are closely related to stakeholder standing to evaluate evidence and autonomy. Standing to evaluate evidence affects stakeholder views about appropriate use of evidence (including the types of resources to use, who consults them, and how they apply them), and provider autonomy drives the discretion that is designed into EBP interventions. What implications do these social dynamics have for implementation science; how do they factor into the determination and implementation of appropriate use and, accordingly, the design of EBP interventions?

5.1. Relating implementation science and policy implementation

Nilsen and colleagues (2013) have argued for cohesion between innovation and policy implementation research. I argue that framing EBP initiatives in terms of policy implementation can help elucidate the EBP implementation process, especially in cases of high standing and autonomy for providers. I use one top-down/bottom-up hybrid model, Matland's (1995) ambiguity-conflict model, to frame how EBP interventions in this study addressed providers' degree of autonomy and agreement with the intervention design, factors that result in more top-down or bottom-up approaches to implementation.

Policy implementation models are relevant for EBP implementation in two ways. First, in many of the EBP interventions presented in this study (Chapter 5), the specific innovation being implemented is just one input toward the desired outcome of clinical practice change toward EBP. The existence of formal policy is an input to some innovation implementation models (e.g., Aarons et al. 2011), in which the policy is an input that facilitates adoption of the target innovation. This usage reverses the relationship between the innovation and the organizational policy from that which is used in certain programs in practice: the EBP innovation as means to a clinical practice change end rather than an end in itself.

Second, the innovation implementation models currently used to study EBP implementation imply a top-down perspective, in which administrators select innovations to be implemented and the implementation model identifies factors affecting its uptake. The high level of discretion afforded to providers in certain EBP interventions suggests that, rather than this top-down perspective, a bottom-up or hybrid approach may provide a clearer descriptive understanding of how those EBP interventions are designed and implemented, mirroring a similar shift that arose in the policy implementation literature to study programs that had high levels of "street-level bureaucrat" discretion (Lipsky 1980).

Whereas policy implementation describes enactment of a desired organizational behavior change, innovation implementation can be thought of as enactment of an organizational change engendering use of the specific innovations being implemented. Innovation implementation models are therefore powerful tools to understand this practice, but are most relevant for programs that are centered on specific innovations, when the scope of desirable provider deviation from those innovations is limited. Policy implementation can therefore frame the broader practice change initiatives and help determine the conditions for innovation implementation models.

In interventions with high provider autonomy, administrators may or may not specify the resources or innovation to use. In some cases, administrators prioritized providers using judgment aligned with organizational goals—i.e., policy—as an outcome over the specific innovations they use or applying the treatment or guideline with fidelity. In these cases, the innovation acts as a means rather than an end. For example, the Department of Family Medicine strongly encouraged the use of EBP decision-making

processes and consultation of point of care reference tools within the clinical workflow. The providers were accorded high autonomy, and the specific innovations being used (the point of care reference or individual guidelines) were less of a concern to the administration than general provider adherence to the decision-making model.

In other cases, the organization intended to implement specific treatments or guidelines, while still affording high autonomy to providers. For example, while the Multi-State Network developed and implemented a guideline for PTSD treatment, the administration was unclear as to just how far providers should go in using it. As one administrator remarked:

> Within healthcare, policy and procedures, as much as you can require care to adhere generally to a Clinical Practice Guideline, for example, or some other care process, you really can't go so far as to say look, every provider will deliver one of these three … things because there's, within healthcare in particular, behavioral health, there's a ton of variation within individual patients, and that's just the nature of the business … within which we work. So you can't go so far as to be a hundred-- you know completely rigid, but you have to let professionals, you're not just hiring employees to flip a burger a certain way, you're hiring professionals, part of that is making sure they have enough leeway to use their professional judgment that they learned, right?

In this case, innovation implementation models were successfully used to design the dissemination program, but providers were offered significant discretion to adapt or deviate from the recommended treatments. While the innovation implementation models could guide increased awareness and uptake of the guidelines, they cannot capture the process of determining what constitutes appropriate use and evaluating whether what happens on the ground is desirable.

In cases with lower provider standing and autonomy, such as when the organization administrator selects guidelines or EBTs and expects them to be applied regularly with fidelity, innovation implementation models are most likely to be appropriate and effective, because the intent of the initiative is non-ambiguous, innovation-oriented, and top-down (i.e., defined by the administrator). When providers are accorded significant autonomy under EBP, e.g., when it is framed as an individual-level decision-making model (Decision-Making EBP, Chapter 4), evaluation of the use of EBP may be best understood using a bottom-up policy implementation model, as the administration sets general guidelines for desirable practice but leaves most discretion for the details of that use to individual "street-level" practitioners to put into practice (Lipsky 1980). For example, in the Department of Psychiatry, the Outpatient Clinic Chief finalized a policy limiting benzodiazepine prescription with rather straightforward criteria for use. This policy is relatively unambiguous, the intended outcomes are clearly defined in terms of the treatment usage rate, and therefore the strategies found in innovation implementation (and de-implementation [cf. van Bodegom-Vos, Davidoff, and Marang-van de Mheen 2017]) models are likely useful. Indeed, the Outpatient Clinic Chief highlighted his belief in the importance of championing the policy and assessing the fit between the treatment and the site, which are key components of innovation implementation models.

5.2. Applying the ambiguity-conflict model of policy implementation to EBP

Matland's (1995) ambiguity-conflict policy implementation model offers one possible framing of EBP implementation that would account for desirable provider autonomy. This model describes four policy implementation types that arise as a function of policy ambiguity, the degree of clarity on policy goals and means, and policy conflict, the degree of goal congruence that exists among stakeholders.

I operationalize ambiguity in the policy as the degree of provider autonomy either written explicitly within the policy (via caveats for clinical discretion) or implied by the type of EBP initiative being implemented[15]. I operationalize conflict as the degree of agreement among administrators and providers on the intervention, which may include competing standing claims about the relevance of the EBP innovation being implemented for the organization (similar to Aarons and colleagues' (2011) "innovation-structure fit"), the EBP model the initiative represents, or its effects on provider identity.

Matland outlines four types of implementation that arise according to the interaction between ambiguity and conflict as set out in the organization policy. In Administrative Implementation (Low Ambiguity-Low Conflict), clear policy goals and means and high coherence among groups on policy goals lead to rather straightforward policy implementation, dependent principally on the resources that are available for the program. In Political Implementation (Low Ambiguity-High Conflict), clear policy goals and means but low agreement among groups on policy goals lead to political implementation dependent on stakeholder groups' relative power. In Experimental Implementation (High-Ambiguity-Low Conflict), ambiguous policy goals and means but agreement among groups on policy goals leads to implementation based on contextual conditions and high variation at the local level. Finally, in Symbolic Implementation (High Ambiguity-High Conflict), ambiguous policy goals and disagreement among stakeholder groups leads to tenuous implementation dependent upon coalitions among stakeholders and may result in local stakeholders implementing the program in name only, following the letter of the law but otherwise carrying out practice as they see fit. Matland underscores that there may be negative effects of goal clarity and positive effects of ambiguity (in enabling local actors to adapt the policy to the local setting); similarly in EBP programs there are positive effects of either high provider autonomy or high adherence to organizational standards depending on the context.

Many of the EBP initiatives I observed correspond closely with Matland's implementation types, suggesting that the ambiguity-conflict model is a useful framework for describing EBP implementation initiatives (Table 6.5). Some examples:

Administrative Implementation: The Department of Internal Medicine colorectal cancer screening programs feature low ambiguity (colorectal cancer screening guidelines are considered unambiguous and the organization expects providers to follow them) and low conflict (providers and administrators all agree on the criteria for screening and its importance). Consequently implementation barriers center on the time and resources that providers have to conduct screening and the logistical challenges of referring patients to colonoscopy.

Experimental Implementation: The Department of Family Medicine use of the Information Mastery decision-making model features high ambiguity (providers have high autonomy in interpreting and applying evidence) and low conflict (providers and administrators agree on the organization's approach to EBP). Consequently, providers vary in the decisions they make under EBP depending on contextual conditions.

Political Implementation: The VHA program to implement Prolonged Exposure (PE) and Cognitive Processing Therapy (CPT) for PTSD is characterized by low ambiguity (the policy specifies the two EBTs that each site must make available) and high conflict (national policymakers, local

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[15] The degree of provider autonomy explicitly set out in the policy may not correspond directly to the degree implied by the EBP initiative. This potential difference is another motivation for introducing the policy implementation framing. For example, if an organization implements a specific EBT using a policy that affords broad provider discretion for its use, legitimate discretion within the scope of the policy may be characterized as non-use of the innovation, obscuring evaluation and interpretation of program performance.

administrators and providers do not agree about the relevance of these EBTs). Consequently, implementation depends on the relative power and agreement at the local level of administrators and providers, and debates arise among stakeholders calling program design into question (see Cook et al. 2013 for variation in local sentiment about the EBTs and implementation approaches; Rothbaum 2016; Steenkamp 2016b).

Symbolic Implementation: The Multi-State Network guidelines for PTSD similarly exhibit high conflict because local administrators and providers do not agree about the relevance of various EBTs or a "cookbook" guideline approach, but the use of guidelines offers higher ambiguity and provider autonomy because they allow providers to choose among a broader range of clinical approaches. Consequently, implementation may be symbolic, in which providers follow the 'letter of the law' but ultimately carry out the course of action that they deem most appropriate. As one administrator remarked:

> All they say in the Clinical Practice Guideline is trauma-focused psychotherapy. I am doing that with any CBT approach. The definition is so broad that you are "following" the CPG as long as you are not giving them benzos or horse therapy or making them paint, I am CPG compliant.

Table 6.5. Examples of EBP implementation programs situated within Matland's (1995) Ambiguity-Conflict model. Policy implementation processes introduced by Matland are italicized here in their respective quadrants, accompanied by examples observed in the current study.

	Low Conflict	**High Conflict**
Low Ambiguity	*Administrative Implementation* Colorectal cancer screening (Dept. of Internal Medicine)	*Political Implementation* VHA PE/CPT program
High Ambiguity	*Experimental Implementation* Dept. of Family Medicine decision-making model	*Symbolic Implementation* Multi-State PTSD guidelines

Policy implementation therefore provides an overarching framework that also helps indicate when traditional implementation science models focused on the dissemination of specific innovations would be most effective. Just as Matland's model originally provided indication as to when top-down or bottom-up policy implementation models would be most relevant, a similar approach could be taken in EBP implementation based on the degree of provider autonomy and conflict about the prescribed course of action (potentially based on the extent to which the science is resolved and generalizable to the patient population). When administrators clearly specify policies and implemented innovations and the scope of provider autonomy around those innovations is low, innovation implementation models are well-suited to program design and evaluation. However, the more standing to evaluate evidence and autonomy to apply it that providers are expected to have in the intervention as-designed, the more a bottom-up perspective is necessary to incorporate the autonomy that has been intentionally delegated to providers by the organization in the context of the intervention. Alternative approaches in high autonomy or conflict cases could include more bottom-up Quality Improvement models (such as the Plan-Do-Study-Act model) that rely on program co-design between administrators and local staff, or may be an area for further research. I show that the implementation outcomes of the EBP programs identified in this study loosely align with those described by Matland.

This finding demonstrates first that policy implementation models could complement implementation science models in designing and evaluating programs that are not designed around specific innovations. Second, it indicates the conditions under which a bottom-up approach to EBP

implementation better explains program outcomes, most notably when program ambiguity/provider autonomy is high (e.g., when providers are expected to deviate from the organizational standard or interpret the evidence themselves) or when there is high conflict, or disagreement in how to interpret the evidence. This approach responds to the unexpected theory-practice gap in implementation outcomes described in the VHA case presented in Chapter 1.

Therefore, consideration of provider autonomy and conflict provides a mechanism by which administrators consider more bottom up policy — rather than achieving compliance to top-down specified interventions, administrators set the conditions for providers to practice with autonomy at the individual provider level. The policy and discretionary components have not yet been considered in innovation implementation models, which may indicate why debates about the appropriateness of outcomes occur in the evaluation of certain programs.

6. Discussion

This chapter demonstrates the many ways EBP intersects with standing to evaluate evidence, autonomy in clinical decision-making, and provider identity in practice. Many of these effects, such as skepticism about mechanistic reliance on guidelines, have been documented previously in the literature. However, I demonstrate a number of unexpected or paradoxical relationships among these concepts that demonstrate just how contextual EBP is in practice. While studies of provider sentiment and use of EBP have focused to date on either the general concept of EBP writ large (i.e., operationalized by the theoretical model) or specific EBP interventions (e.g., implementation a single guideline or EBT), I demonstrate that there is a conceptual level in between these two levels that more accurately describes how individuals interact with EBP: the specific EBP model they ascribe to (i.e., what it means to do EBP *to them*) and the predominant EBP model at their organization (i.e., the approach to EBP represented by the EBP-related activities and interactions that their organization conducts or encourages).

In some sense, this finding corroborates the assertions among EBP proponents that stakeholders who criticize EBP 'misunderstand' or 'misperceive' the concept (DiCenso et al. 1998; Straus and McAlister 2000). I describe in Chapter 4 that most observers do have a narrow definition of EBP that focuses only on an aspect of the concept rather than the whole. But this phenomenon also includes many of those proponents who emphasize their own preferred aspects of EBP, much like the parable of the blind men touching an elephant. Stakeholders respond not to the theoretical model of EBP, often because they are not familiar with it, but rather to the narrower, salient aspects of EBP encapsulated in their mental model or to the specific organizational initiatives branded as EBP that they experience. That the mental model is socially constructed (Chapter 4 – in its variation by organization/context) and that organizational activities also reflect different organizational goals (Chapter 5) demonstrate the need to incorporate these social aspects into EBP theory.

But this chapter demonstrates just how socially and organizationally driven the individual's approach to EBP is – providers respond not only to a general concept or an individual guideline but to the set of activities, policies, educational opportunities, and social interactions by which EBP is constructed in their past and present organizations. This finding is consistent with the findings of Gabbay and le May (2004) and Dawes and Sampson (2003) that providers seek much of their evidence for specific clinical issues from their colleagues, as well as Alvesson's (2001) argument that knowledge in many professional contexts is ambiguous, socially constructed, and demonstrated by rhetorical claims among professionals. Incorporating social construction of EBP into EBP theory could help drive more accurate descriptive theory of how EBP and research evidence are used in clinical practice, including both negative and positive effects, and more appropriate prescriptive models for EBP.

While EBP implementation is typically evaluated within the context of innovation implementation — based on the diffusion literature and aimed at ensuring successful uptake of EBP resources (e.g., guidelines, EBTs) — in practice, I find that administrators are keenly aware of the questions of provider autonomy in determining "appropriate" levels of use of a specific innovation. As a result, EBP implementation also resembles policy implementation, setting appropriate standards of provider discretion rather than purely achieving the use of a particular innovation. To date, policy implementation and innovation implementation have been effectively separate (Nilsen et al. 2013), and the policy implementation framing has not been used to assess EBP implementation. However, I argue that it is an appropriate model for organizational EBP, particularly in EBP initiatives with high provider autonomy, and could help understand both the theoretical gaps (EBP implementation challenges despite significant theory on barriers and facilitators) as well as practice setting puzzles (persistent disagreement over EBP in organizations).

There is a general perception that EBP is a largely technical question, dealing with evidence about medical response to treatment, presented at the right time in clinical decision-making. Indeed, Cairney and Oliver (2017) draw on this perception to rightly underscore that Evidence-Based Policymaking is value-driven and political and cannot be fully understood from a purely technical approach, asking "Evidence-based policymaking is not like evidence-based medicine, so how far should you go to bridge the divide between evidence and policy?" The present chapter demonstrates that the conduct of EBP is actually more political and social than perceived. One theme of this chapter, then, is that Evidence-Based Medicine is more socially constructed, tacit, and paradoxical than it is treated by researchers and practitioners. Recognizing that Evidence-Based Practice in organizational contexts is more like policy-making, and that its political, discretionary, and social dynamics extend beyond the pure individual-level clinical decision-making model of Evidence-Based Medicine, therefore can help bridge the divide between theory and practice in EBP.

Chapter 7 - Discussion

This dissertation describes the varied ways healthcare providers, administrators, and researchers actually use Evidence-Based Practice (EBP) in their routine tasks as medical providers. These stakeholders individually and collectively construct the meaning of EBP *in situ* as they use it in individual clinical decision making, organizational initiatives, and in social and professional relationships with their colleagues and organization.

1. <u>Findings</u>

First, I described how EBP is used by individual providers from a clinical standpoint (Chapter 4). Despite a balanced theoretical model built over a decade of epistemological and logistical criticism and subsequent refinement, providers, administrators, and researchers in practice hold what I call an *implicit model of EBP* constructed over time through their training and experiences. These implicit models of EBP center on narrow aspects of the broader EBP concept; importantly, they are not "misperceptions" of EBP (cf. Straus and McAlister 2000), but rather represent incomplete, tacit emphases of one aspect of the EBP model relative to the rest. The implicit models of EBP I observed were: **'Decision-Making,'** focused on the interpretation and adaptation of evidence in the local context, the *process* of EBP; **'Resource-Based,'** focused on specific evidence artifacts, such as individual research studies and clinical practice guidelines, and their relative quality, the *inputs* to EBP; and **'Evidence-Based Treatment (EBT)-Based,'** focused on the specific interventions that have been empirically demonstrated as effective, the *outputs* of EBP.

Second, I described how EBP is used by organizations to achieve clinical goals (Chapter 5). Although EBP is defined in theory as a model for individual practitioners to offer research-based care, organizations increasingly conduct interventions both to facilitate individual EBP and to achieve organizational ends. These goals include standardizing care and making specific clinical treatments available to patients at the site. Organization administrators use a wide range of activities under the banner of EBP, including disseminating evidence and educational resources, selecting and implementing specific EBTs, establishing clinical practice guidelines, encouraging "evidence-based" clinical decision-making models, and conducting research in-house. They implement these activities through a range of methods, from general encouragement through championing and education to more substantial and formal methods including writing policy, adapting clinic structure, and hiring for specific skills such as research or capability in a specific EBT.

Finally, I demonstrate how EBP is used by providers and organization administrators in social and inter-professional contexts (Chapter 6). I find that providers and administrators use EBP not only for pure clinical decision-making purposes to develop treatment plans for individual patients, but also to support their inter-professional interactions with colleagues, other stakeholder groups (managers, providers, and researchers) and their organization. That is, individual providers within the organizational context use and talk about EBP in ways that signal their self-defined professional role to colleagues and managers, and in turn their organizational position and relationships affect how they conduct EBP. Specifically, I found that stakeholders varied in their uses and normative views of their own and other stakeholders' *standing to evaluate evidence*, i.e., the skills and role to evaluate evidence for clinical purpose, and provider *autonomy*, i.e., the effective scope of decision-making that they have within and without EBP. In terms of standing, I observed three social uses of EBP that differ from its clinical decision-making model, which I call: *renouncing* standing, in which stakeholders choose not to evaluate evidence, either voluntarily by delegating this responsibility or involuntarily by treating the evidence as a unitary, prescriptive 'black box;

demonstrative standing, in which stakeholders intentionally and conspicuously use evidence to demonstrate 'evidence-based' rigor to other professionals and claim standing; and *administrator standing*, in which organization administrators review evidence themselves, either in support of or instead of provider interpretation of the evidence. These patterns represent varying degrees of administrator standing and organizational control in contrast to professional autonomy.

I discuss the implications of each set of findings separately within the respective chapters. But taken together, these findings also jointly impact healthcare stakeholders and organizations, often implicitly and unintentionally. Stakeholder views of what it means to conduct EBP in clinic are affected by how they observe their colleagues and organizations using EBP and evidence, such that the clinical, organizational, and social aspects of EBP are closely coupled and reinforce one another (Table 7.1). For example, in the Department of Family Medicine, attending physicians and residents jointly consulting Dynamed as a part of the clinical workflow for even common clinical issues reinforced residents' understanding of EBP as regular consultation of easy-to-use, reliable secondary resources; Department of Psychiatry colleagues trading individual research articles from recent, influential clinical trials reinforced residents' understanding of EBP as tied to significant changes in the medical literature that merit consideration in clinical decisions.

Each of the EBP implicit models has inherent advantages and limitations. No one EBP model is complete, which is precisely why the theoretical concept of EBP was built to incorporate each of these constituent elements. By calling attention to the tendency of stakeholders to rely on different models and salient aspects of EBP in different contexts, this study offers individuals and organizations a fuller understanding of EBP in practice. Consequently, it describes the variety of approaches available for adoption according to individual disposition, ranging from standardization based on external evidence to discretion based on local expertise.

Respondents by and large did not internalize the complex and multi-faceted understanding of EBP from the theoretical model (Haynes et al. 2002a), nor the *Users' Guides to the Medical Literature* (Guyatt et al. 2002), that detail the prescribed approaches to evidence evaluation and application. In fact, all but three respondents (all scholars in the area) were unaware of these central models and history of EBP. Rather, stakeholders developed a tacit understanding and approach to EBP based on the social and organizational signals about EBP that they observed, primarily during their clinical training but also over time from those around them and their organizational initiatives. For example, social and organizational signals that emphasize EBP resources or specific treatments, such as the Department of Internal Medicine providers who shared individual research citations among colleagues or the Department of Psychiatry program to implement CBT through training programs and changes in clinic structure, reinforced providers' beliefs about how to use EBP in clinic (Resource-based and EBT-based EBP, respectively), in the absence of explicit, formal training in the use of EBP (such as in the Department of Family Medicine).

Given these strong social signals, the implicit models of EBP are often accompanied by specific inter-professional practices and orientations that emerge among colleagues with similar approaches to EBP. For example, I found that Decision-Making EBP among individuals was frequently associated with renouncing standing in order to make regular evidence consultation within the workflow manageable, but because Decision-Making EBP occurs within the clinical visit and is individualized for each patient, it may be highly independent. I found that EBT-based EBP was often associated with concerns about provider identity, because the standardization and implementation of specific treatments may lead to fears of "cookbook medicine" threatening provider identity; conversely psychotherapy providers who identify with specific treatment mechanisms may then also identify as 'evidence-based' practitioners, strengthening their belief in EBP because it corresponds with their chosen approach to clinical practice. Finally, I most frequently observed demonstrative EBP among those providers with a Resource-based view

of EBP, because they were so responsive to individual studies or guidelines and the rigor associated with them.

Demonstrative EBP and the Resource-Based model were also closely linked with medical school education, absent further training and refinement in EBP. Many respondents noted that in medical school, they learned and were incentivized to identify and follow high quality research studies. They are taught a hierarchy of evidence and examined on their ability to evaluate the research and describe its applicability to a specific clinical case. In the absence of practical learning in EBP, this resource-based approach to evidence interpretation becomes synonymous with EBP, and providers view it as important to demonstrate that they use this rigorous approach to EBP. When other colleagues also maintain this view of EBP, the inter-professional actions they conduct, trading citations and referencing specific resources as in the Department of Internal Medicine, reinforce this approach to EBP. Providers then often use other, 'less rigorous' clinical reference tools to quickly access needed information for specific cases, but it is perceived as separate, less 'evidence-based' and therefore less desirable to communicate to colleagues.

Table 7.1. Implicit Models of EBP (Ch. 4) and the common social and inter-professional phenomena (Ch. 6) associated with them.

Implicit Model of EBP (Ch. 4)	Benefits	Limitations	Common inter-professional effects (Ch. 6)
Decision Making	Providers incorporate evidence and adapt as necessary, mixing both evidence and individual expertise.	May result in highly variable, ad hoc decision-making processes that may not be sufficiently rigorous. Little room for organizational standardization	Renouncing standing, highly individual, may be collaborative if structures permit
EBT-Based	Providers use the best treatments as output, clear indication of what to implement and to measure from organization perspective;	May 'overapply' treatments in cases where they are actually less desirable. May not have mechanism for reconsidering new evidence, providers may not agree with the treatments or the "cookbook" process. May not capture what providers actually do in making decisions.	Identity — 'cookbook' practice may be perceived as a threat to identity. Or, may support provider identity as an 'evidence-based provider.' Strong organizational role and standardization which providers may disagree with
Resource-Based	Providers know primary literature, stay up to date on latest evidence about relevant clinical conditions	May have incomplete basis for decision-making because only consult specific individual articles (availability heuristic) or because science is uncertain. Providers may not have a process for applying resource to new context, time consuming. May not capture what providers actually do in making decisions or the output	Demonstrative – Responsive to evidence artifacts rather than individual decisions.

This study addresses the gaps between EBP theory and practice, describing the paradoxical relationships that arise in the use of this concept in practice. In one sense, the use of EBP is broader in practice than in theory, in terms of the meanings it has taken on beyond the scope of clinical decision-making. Despite its narrow scope as an individual clinical decision-making process, EBP takes on a broader meaning in practice and serves broader purposes in organizational initiatives as a mediator of social relationships among individual colleagues and their organizations. However, EBP is also narrower in practice than in theory in terms of the ways it is used in decision-making. Despite a theoretical definition depending on a balance between external evidence and local expertise, in practice, individuals highlight only specific aspects of the EBP definition but not the full model.

2. Contributions to the literature

Refinement of the EBP concept – This thesis contributes to the refinement of the EBP concept. First, from a research methods standpoint this thesis demonstrates the importance and difficulty of operationalizing EBP to measure and evaluate EBP use and implementation outcomes. This thesis demonstrates that in applying the concept of EBP, practitioners cluster into three approaches that emphasize different aspects of the EBP model, leading to different approaches to clinical practice. Empirical research on EBP prevalence to date has typically focused on provider skills in evaluating research literature (e.g., Melnyk et al. 2004; Oliveri et al. 2004; Zwolsman et al. 2013) or rates of use of specific evidence-based recommendations or treatments (e.g., Sackett et al. 1995; Shiner et al. 2013); this thesis demonstrates the many complex decision-making processes that mediate these capability and output measures, respectively. Further, demonstrating that respondents cluster around input-, process-, and output-centric framings of evidence-based decision-making provides recourse to the more general decision-making literature (e.g., Cohen and Bailey 1997; Mohammed and Ringseis 2001).

The formulation of the EBP concept has been called into question for its embedded normative position. Greenhalgh (2011:94) argues that the positioning of EBP as "the conscientious, explicit and judicious use of current best evidence" (Sackett et al. 1996:71) is inherently political rather than theoretical, as it is framed in such a way as to be perceived as unobjectionable. She proposes an alternative *normative* definition that makes the claims underlying the EBP definition explicit and debatable, as "the use of mathematical estimates of the chance of benefit and the risk of harm, derived from high-quality research on population samples, to inform clinical decision-making" (ibid., Greenhalgh and Donald 2003). This thesis demonstrates through observation and inductive analysis what providers and organizations actually do when carrying out EBP, identifying three interpretations of the balance between evidence and discretion that lead to different clinical decisions. This thesis therefore complements those efforts to refine the EBP concept by providing *descriptive* definitions based on what stakeholders actually do in conducting EBP.

This thesis extends Gabbay and le May's (2004) finding that clinical groups develop locally constructed "mindlines," that is, collectively developed and reinforced tacit guidelines, indirectly informed by external guidelines, rather than adhering closely to external guidelines directly. I demonstrate that individuals and their organizational colleagues carry out a similar process to construct meanings for EBP writ large, through social interactions such as sharing evidence artifacts, discussing decision-making processes, and making sense of organizational EBP initiatives. When EBP has been studied to date it has been most often treated as a direct application of the theory without examining the actual interpretations, uses, processes, and relationships that shape and govern the use of EBP in practice.

Provider Skills and Attitudes toward EBP – While empirical EBP research to date has been primarily focused on provider skills in evaluating research (e.g., Melnyk et al. 2004; Oliveri et al. 2004; Zwolsman et al. 2013) or their attitudes toward or skills in applying specific interventions, particularly

psychotherapies (e.g., Aarons 2004; Borntrager et al. 2015; Reding et al. 2014), I find that views and skills in EBP are actually much more nuanced and complex, incorporating multiple and varied beliefs about what evidence to apply, and when and how to use it. The implicit EBP models identified in this thesis therefore mediate attitudes toward EBP at both levels: 1) providers' attitudes about EBP writ large is mediated by what they actually understand EBP to be — which I show is highly variable and could result in very different actual practice; 2) providers' attitudes about specific EBP programs or resources is mediated by how well they conform with their view of what it means to do EBP, and whether the program as designed permits them to carry out their view of EBP. EBP sentiment is therefore a nuanced interaction of the views of EBP that an individual develops from their profession and colleagues, their own approach to using evidence on a day to day basis (which may not correspond to what they learned EBP to be via their profession), and the organizational initiatives that enact EBP, which may or may not align with those individual views.

Implementation Science – This thesis also contributes to the implementation science literature, on the relationship between implementation of innovations and desired practice change. I draw from the policy implementation literature, largely separate from the implementation science (implementation of innovations) literature to date (Nilsen et al. 2013), to identify when different approaches to innovation implementation may be appropriate. That literature to date has been largely focused on how to implement specific innovations, as the model outcome, but I demonstrate that organization administrators are largely focused on broader practice change, with uptake of the treatment as secondary to general consideration of the literature and high autonomy for providers. I draw from Matland's (1995) ambiguity-conflict model from the *policy* implementation literature to demonstrate how different degrees of provider autonomy implied by an EBP initiative and degrees of agreement among providers and administrators about the relevance of the innovation to the organization are conditions for varying degrees of top-down or bottom-up approaches to *innovation* implementation.

3. Limitations and Future Research

Sample Size and Distribution — This study is first and foremost limited by its size and the roles and relationships among respondents. As this is the first study to address the variation in working, *in situ* definitions of EBP, it is difficult to say whether it has successfully captured the full breadth of substantive meanings circulating among practitioners that would be captured in a larger sample. Although I reached theoretical saturation with respondents repeating common themes by the end of my data collection with this relatively small sample, it is possible that other meanings for EBP have been developed in other organizations, and that the meaning of EBP will evolve in the future. This study relied heavily on academic medical centers and resident education, which is essential because of its formative role in provider identity and behavior. From one perspective, academic medical centers represent a 'best case' in terms of attention to and education in the concept of EBP and the application of research in clinical practice. By choosing the organizations most likely to endorse, use, and educate providers in EBP, I would therefore expect this sample to underestimate the variation in how EBP is conceived and implemented in a broader cross-sectional study. For a similar reason I also chose academic medical centers in order to minimize the effect of financial incentives on treatment decisions, in order to evaluate how providers and organizations would weigh evidence in treatment decisions without consideration of finances. In other types of organizations that I did not sample, e.g., small private practices, I would expect even more of a gap between EBP theory and practice.

However, because this study is primarily aimed at identifying the variation in meanings and uses of EBP, this sample was sufficient to demonstrate *existence* of variation in EBP meaning and organizational uses, and the existence of social meanings that have not been taken into account in theory.

Longitudinal Analysis of EBP Interventions — This study also would have benefited from the capacity to follow an intervention longitudinally from development through to implementation and sustainment. The organizational initiatives I was able to observe were either too early in the development stage to practicably follow given the duration of this study or well beyond implementation, such that I could only study them retrospectively. While I was able to observe both the early and late stages of program development and sustainment, I relied retrospectively on the recall of study participants and comparison across different organizations, rather than being able to track the formation of EBP initiative scope, development of an implementation strategy, and use of the initiative by providers. While I was able to statically observe each phase separately, in future research it would be beneficial to observe the dynamics of how EBP initiative design, administrator goals, and provider behavior interact as the meaning of EBP and its relation to organizational goals are negotiated in practice.

Substantiating Prevalence and Relationships Statistically — Because this research is qualitative in nature, I am unable to statistically substantiate the volume of the behaviors and relationships identified, that is, the prevalence of each model of EBP, types of organizational initiatives and their relationships. Because this is not a random sample, it cannot be generalized to the broader population (e.g., of academic medical centers, by specialty, of the full US clinician population) but offers an existence proof of variation in what should be the most compliant and professionalized practice in an academic medicine setting. Further research should be conducted to determine the distribution of these models in a broader and statistically representative population in order to fully capture the extent of these variations in EBP meaning, including, for example, development of a survey-based index to identify more generalizable clusters via factor analysis. Such a study could contribute to medical education (identifying which components of EBP providers do not understand as well and the effects of this understanding on practice), as well as to EBP initiative design and implementation (to understand how the meaning of EBP facilitates or impedes organizational initiatives).

Refinement of models and application to practice – From a practical standpoint, the three models of EBP that I identify empirically could be refined within the medical research community, prescribing different models of EBP according to clinical context (based for example on the state of the evidence supporting various EBTs, the relative effectiveness of treatments, the importance of contextual factors and the desired degree of provider autonomy).

These results are most relevant for medical education curriculum design and administrators' design of EBP initiatives. Because these results demonstrate how providers and organizations actually use EBP in practice, this work provides an opportunity for medical educators to assess whether their curricula address clinical practice in the way they want. Similarly, knowing how providers employ evidence resources and respond to organizational programs is likely to help administrators in the design of EBP initiatives. Further, administrators reading this study will be more aware of the broad range of options they may have in designing EBP initiatives, choosing interventions or resources to implement, and designing for provider autonomy. This awareness is important so that administrators are not bound simply by the approaches implied by their implicit model of EBP, but will be open to a broader range of ways to enact the use of evidence that they want for their site. Because the term EBP is so value-laden, its use in organizations has a significant impact on professional identity, standing, and autonomy; and, even despite organizations' efforts to control for these effects in reasonable and pragmatic ways, the salience of the term affects views about it (because stakeholders respond to the idea of EBP rather than the details of the policy, as evidenced by the differing interpretations of the VHA EBT policy presented in Chapter 1).

Application to Evidence Use in Other Professional Contexts — Finally, this research could be extended to other professional settings in which EBP or the use of evidence is common. Most notably, EBP has been forcefully advocated by some in elementary and secondary education training and policy (Davies 1999), and it is likely that similar variation in meanings and uses of EBP identified in this thesis are visible in that domain. There are particular concerns about how generalizable the model of EBP is from the medical to the education domains and whether it is implemented in an overly top-down manner (e.g., Biesta 2007). Further research could be conducted to extend the results of this thesis into the education domain, in particular identifying how teachers and administrators interpret the use of EBP in education, and the extent to which the input-, process-, and output-centered implicit models of EBP identified here are used in other domains.

As described in Chapter 6, the "art and science" of practice, i.e., the tension between discretion in local cases and adherence to generalized knowledge, is a common theme across many professions, including engineering (Schön 2017; Seron and Silbey 2009). While they may not use the term EBP, the variation in beliefs about how to apply external information and the organizational tension between standardization and delegation to professionals identified here are likely applicable in diverse areas of professional practice and organizational control.

4. Practical Applications

As described above in the section on limitations and future research, even without quantification of their prevalence and distribution, these results can be taken into consideration in the design of medical education and organizational EBP initiatives. Medical school and residency faculty should consider the effects of their education, especially the emphasis on the rigor and hierarchy of evidence, being sure to complement this aspect of EBP with practical training on how to incorporate evidence into real world decisions. As many respondents related, medical school training played a formative role in how they view EBP. Due to its focus on the details of how to read and evaluate literature, in the absence of more active EBP training in later organizational settings, they take away an emphasis on the strength of evidence that, while theoretically correct, may not correspond with normative beliefs about how they should conduct clinical practice in the real world.

Organizations should take into consideration the social effects of EBP initiatives, including the types of EBP resources they implement and the ways they want providers to incorporate that external evidence. As evidenced by the debate about the VHA case, even sophisticated policies with considerable clinical discretion incorporated into the policy may be understood and applied by providers and observers in a narrower fashion. Organization administrators should therefore consider the variation in understandings and interpretations about what EBP constitutes in practice and the social and behavioral factors that may affect clinical practice change.

Finally, many organizational initiatives rely on heuristic concepts that take on a meaning of their own in practice. This research provides a cautionary tale about the potential for a term to take on meanings and organizational roles that are far broader than originally intended for their use, as well as representing a narrower concept with less nuance than designed. This duality may compromise organizational efforts to implement new approaches to professional practice. This research demonstrates how these efforts to change professional practice should be used with caution.

5. Conclusions

EBP is a powerful concept and has quickly been integrated into healthcare settings at all levels, most notably in the development of professional identity through medical education, as well as the work

and identities of other healthcare providers (behavioral health, nursing, public health) and other professionals (management, education). Appealing to 'evidence' to support decisions is seductive in a professional occupation that relies for its standing, independence, and success on the command of scientifically generated evidence (Greenhalgh 2011). The routinized use of empirical results to test decision-making premises (based on expertise or theoretical models) is part of the core of professional practice, an important reflex for professionals to have. Indeed, this symbiotic relationship between deductive reasoning and empirics is how knowledge is constructed in academia (Abbott 2004; Lieberman 2016). Professional work is understood, most generally, as the discretionary application of a general body of knowledge (Abbott 1988). Thus, the tension between what is known and its applicability to particular cases is at the heart of professional practice. But much like in academia, the relationships between empirics, theory, and practice require a nuanced understanding of what each information source may contribute to decision-making. Conducting EBP in practice incorporates both the challenges of academic knowledge assessment with the constraints and consequences of decision-making in professional healthcare practice — it is no silver bullet for clinical care quality. Especially in light of the constraints on providers, it is understandable that the different lenses through which they view the balance between external evidence and local discretion are tacit, context-dependent, and themselves discretionary. It is for this reason that the "art and science" of EBP and clinical practice was such a common refrain among this study's respondents.

This study contributes to our understanding of how EBP is used in practice: how it is understood, interpreted, and carried out by those who use it. It is intended to shine light on the nuances, successes, and contradictions that arise in practice when providers and organizations attempt to apply general knowledge to individual cases and systematize strategies and policies for implementing EBP. By doing so, this thesis contributes to the goal of the EBP paradigm to help providers and organizations apply systematized evidence in professional contexts (and systematized processes for doing so) toward their self-defined goals of better decision-making and better health care delivery.

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Appendix

1. <u>Clinician Interview Guide</u>

1.1. General questions about clinical practice

- Tell me a bit about your work. How did you get to your current position? How long have you been practicing?
- What kinds of patients do you see?
- What are some things that are going well?
- What are some challenges you face in your practice?

1.2. The Practice Process

- Let me ask for a few details so I can understand how you do your job:

- When a new patient arrives, how do you assess the case and decide what treatment approach to take?
- What tools do you have available to you?
    - Prompt: What different treatments are available? What sources of information or advice are available?
    - Where did you learn about these [treatments, sources]?
- How do you go about making choices between treatment alternatives?
- Where do you get information about what kinds of treatments to use?
- How has your treatment toolbox changed over time?

1.3. Anchoring to a specific case

- Could we walk through a specific case? Let's talk about the last [anchor condition] case you worked with. We can call this person "Joe."
- How did Joe first arrive at your practice?
- What did you do during you first session with Joe?
- How did you decide to do that?
- Where did you learn to do that?
- Do you write something up at the end of the session?
    - Do you take notes during the session? How does that work?
- How have your treatment plans changed from session to session?
- How do you know if the treatment is working?
    - Where did you learn to do that?
- Has Joe's case been particularly [easy/difficult]?
- Could you tell me about a [difficult/easy] case?

1.4. EBP and Organizational Policies

- There has been a lot of talk in the research literature and press about the use of Evidence Based Practice. There have been arguments both for and against its use in mental health practice.

- How does this concept arise in your clinic? Have you used this concept in your own work?
  - Could you describe a case in which you used EBP? How did you use EBP, why, what happened?
  - Could you describe a case in which you did not use EBP? Why not? What happened?
- What does Evidence-Based Practice mean for you? Could you explain what it is?
- Is Evidence-based Practice discussed at the meetings or conferences you attend?
  - Was it discussed in your training when you were a student?
  - How was it mentioned?
- In your clinic, is Evidence Based Practice required or encouraged? Either for [Condition] or another condition? How did that come about? How does this particular policy affect your work?
- Do you have an opinion about Evidence-Based Practice?

  How has EBP use changed at your organization?

  How has clinical practice in general changed with the new department chair?

  Are there any initiatives you're familiar with?

1.5. General Concluding Questions

- This is a preliminary interview and I'm looking for as much provider input as possible. I'm most interested in how clinicians make treatment decisions. What else do you think I should be looking at?
- As I develop the study further, I'd like to have you read my findings to be sure I've captured your perspective accurately.

2. Administrator Interview Guide

2.1. General questions about administrator experience

- Tell me a bit about your time in [your organization]. How did you get to your current position? Did you ever practice outside the [organization]?
- What is a typical day like in your work? What are some things that are going well, what are some challenges?
- What are your clinical practice priorities at your [site]? How have they changed over your time here? Could you give me an example?
  - Could you tell me a bit about your interactions with [hospital] leaders? [network] leaders?

2.2. Evidence-Based Practice Questions

- I understand [your organization] has been talking about Evidence-Based Practice over the past few years. Could you tell me a little bit about how you've experienced this initiative?
  - How does Evidence-Based Practice come up at your site? How do you use it, and in what cases?
  - What are some of the challenges in conducting EBP at [your organization]?
- What is Evidence-Based Practice to you? How did you first hear about it? Have you used it in other settings?
- How do you assess whether Evidence-Based Practice is being conducted?
- What is your view of how EBP has been implemented in the [organization]?

2.3. EBP Policy Questions

- What formal or informal guidance or directives have you received/developed that affect clinicians' treatment choice at your facility?
  - What are these like? How have they changed over time?
  - Probe: Are you familiar with any hospital-level/system-level guidance affecting EBP use?
  - How are they communicated to you? Does anyone at the hospital or system level work with you to implement them?
- What resources or information are available to you to guide EBP use at your [site]?
- Is there any additional information or resource that you would like to have in designing treatment/EBP use guidance at your [organization]?
- How do you assess the effects of this policy at your site? How do you communicate those results with the hospital/system leaders?
- Are you familiar with EBP use at other organizations? How is your organization similar/different?
- How are these policies playing out?
- Are clinicians employing the policy as intended? How do you know?
- The policy allows clinicians to deviate and tailor care as appropriate or by patient preference. How has that been working? How have clinicians been interpreting/deviating?

  Is there anything else you can tell me about EBP and treatment choice at your organization?