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Building Interdisciplinary Teams in Emergency Care to Respond to National Emergencies: Addressing the Opioid Epidemic

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Abstract

This study responds to the gap in knowledge in translating team members' interdisciplinary knowledge to address wicked problems. We use qualitative methodology to understand the team-building process and response to the opioid epidemic in emergency care. We collected data through direct observation of nine health system science researchers and thought leaders as they performed in team-building activities and semi-structured interviews. The cultural exchange framework informed our selection and assessment of team-building activities, and the science of team science (SciTS) framework informed our understanding of promoting interdisciplinary collaborations. We identified six themes representing three areas: (1) Knowledge Building and Strategy Development (need for interdisciplinary understanding of substance abuse and mental health in the emergency department (ED); interdisciplinary approaches to fight the opioid epidemic in the ED); (2) Team Demographics and Collaboration (prescribing and collaboration; the role of interdisciplinary team composition and effectiveness in the ED); and (3) Identity and Relationship Building (role of professional identity in contributing to interdisciplinary research; building effective organizational relationships in the ED). Members' personal and professional connections are fundamental for developing nuanced interdisciplinary strategies to respond to the opioid epidemic in the ED. We discuss implications for strategies that promote team building and improve treatment practices.

Keywords: team building, interdisciplinary collaboration, emergency care, opioid epidemic, implementation science

1. Introduction

There is growing interest in leveraging the knowledge, expertise, and skills of teams of experts from different disciplinary backgrounds to respond to wicked

problems affecting our society. Wicked problems are problems that require insight from experts who cut across multiple disciplines, in order to address the problem [1]. The interconnected aspect of such problems highlights their complexity. However, it is still unclear how team members from different disciplines can effectively leverage their unique knowledge to develop innovative solutions to harmful epidemics, such as the opioid epidemic faced by the United States. Interdisciplinary team approaches, those that involve applying the knowledge and skills from different academic disciplines or subjects that are normally regarded as distinct, to the same issue [2] are gaining visibility in translation, dissemination, implementation, and improvement research. In this research study, we seek to understand and develop strategies that facilitate the formation and sustainability of interdisciplinary teams and improve health-care delivery in crisis situations [3]. We focus on opioid epidemic crisis in the United States and how EDs respond to the opioid epidemic, within the context of interdisciplinary teams. EDs are dynamic settings where interdisciplinary teams, in which collaborators can be located at different departments or institutions, endorse different ideologies, or rely on different methodologies, but share the common goal of addressing a problem, are necessary to developing cohesive and insightful solutions to the opioid epidemic in the United States.

2. Interdisciplinary teams in the emergency department to respond to the opioid crisis

2.1 Team building conceptual framework

Building on conceptual work on multi and interdisciplinary teamwork in translational science [3, 4], this study examines how team building interactions and phases affect [5] team members' response to initiating opioid use disorder (OUD) treatment for patients in the ED. We relied on the science of team science (SciTS) framework to explore the key challenges and solutions to promoting interdisciplinary collaborations (see **Table 1**). SciTS seeks to understand barriers and facilitators of collaborative and team-based research efforts and identify conditions, understand processes, and achieve outcomes associated with team objectives [6]. Barriers and facilitators are at different levels, including intrapersonal (own knowledge and competencies brought to the team), interpersonal (communication, connection and shared knowledge among team members), physical environment (structure of communication, collaboration, execution and problem solving), societal and political (community norms, political discourse), and technological (communication, connection, description). Understanding interactions and interdependencies between these factors can lead to a better understanding of the process of how team becomes effective in addressing critical issues. Furthermore, using SciTS to understand how to develop and support interdisciplinary collaboration may lead to effective translation of research findings into practice [6, 7].

We rely on a cultural exchange approach (see **Table 1**), which centers on sharing of ideas and knowledge between group members representing different professional systems, to help us understand the transaction of knowledge, attitudes, and practices that occurs during interactions [8]. During this process, we evaluated a series of discrete activities and document aspects from team science (space, communication, knowledge) to identify how team-building exercises ultimately enhanced problem-solving. This method consisted of evaluating four conditions through team building activities: 1) groups' accessibility to one another; 2) a sense of mutual respect; 3) creation of a shared language; 4) willingness to compromise/accommodate the needs

Framework	Components
Science of Team Science (SciTS) Framework • To explore the key challenges and solutions to promoting interdisciplinary collaborations • Important for effective translation of research findings into practice	• Intrapersonal (own knowledge and competencies brought to the team) • Interpersonal (communication, connection and shared knowledge among team members) • Physical environment (structure of communication, collaboration, execution and problem solving) • Societal and political (community norms, political discourse) • Technological (communication, connection, description)
Cultural Exchange Approach • To select team building activities that meet specific criteria	• Group accessibility to one another (e.g., interaction activity - bowling) • A sense of mutual respect (decision making activity- ESCAPE room) • Creation of a shared language (e.g., health-systems experts meeting) • Willingness to compromise or accommodate each other needs (e.g., consensus group) to develop interdisciplinary approaches to respond to wicked problems.

Table 1.
Frameworks.

of others [8]. These activities are essential to bridging and merging diverse perspectives and transcending disciplinary boundaries.

This study focuses on assembling a interdisciplinary team of scholars (Social Work, Nursing, and Medicine) at a research University and undertaking a team-building process so as to build interdisciplinary approaches to 'wicked problems' [9]. We implemented team-building activities and assessed the process of becoming an interdisciplinary team while conducting a research study addressing ED responses to the opioid epidemic (IRB # RC010001). The efficacy of ED responses to the opioid epidemic can be considered a 'wicked problem' requiring a interdisciplinary approach, because such responses are influenced by contradictory and changing conditions and are seemingly intractable for any given discipline [9]. Our findings may inform strategies for constituting and preparing interdisciplinary teams to effectively respond to challenging issues, and to understand transformational experiences that may support the achievement of their common goals.

3. Methods

3.1 Sample and procedures

The sample included one team of nine researchers: four researchers from USC Social Work, two researchers from nursing, a researcher from the Keck School of Medicine, and an ED practicing physician from the Los Angeles County + University of Southern California (LAC + USC) Medical Center. We constituted a team with members from disciplines that have been shown to be important to improving care delivery in emergency departments. Each team members also had experience in opioid use disorder research or care delivery in the ED, but mostly from a disciplinary lens.

We began our research by drawing from the literature on team building to develop a curriculum of team-building activities informed by the cultural exchange framework. During the course of the study, we introduced participants to team-building activities that match their disciplinary knowledge and strategies and shown to promote multidiscipline approaches for ED treatment of individuals with OUD. We selected activities that met the Palinkas et al., criteria [8] and accessible to study participants: 1) group accessibility to one another (e.g., interaction activity - bowling); 2) a sense of mutual respect (decision making activity- ESCAPE room); 3) creation of a shared language (e.g., health-systems experts meeting); 4) willingness to compromise/accommodate each other needs (e.g., consensus group) to develop interdisciplinary approaches to respond to wicked problems.

3.2 Data collection

We collected data through three different approaches and settings: direct observations during structured team building activities with the full team of nine members followed by semi-structured interviews of five members; direct observation from a scientific presentation; and a focus group and consensus session with six members (see **Figure 1**). We sought to elicit interdisciplinary insight, as a fundamental mechanism for translating team-effective practices and generate innovative frameworks, methodologies, and policies toward solving identified problems [5, 10]. Our data collection was guided by the cultural exchange framework (identification of team building activities) and the SciTS framework (identification of barriers and facilitators to collaboration).
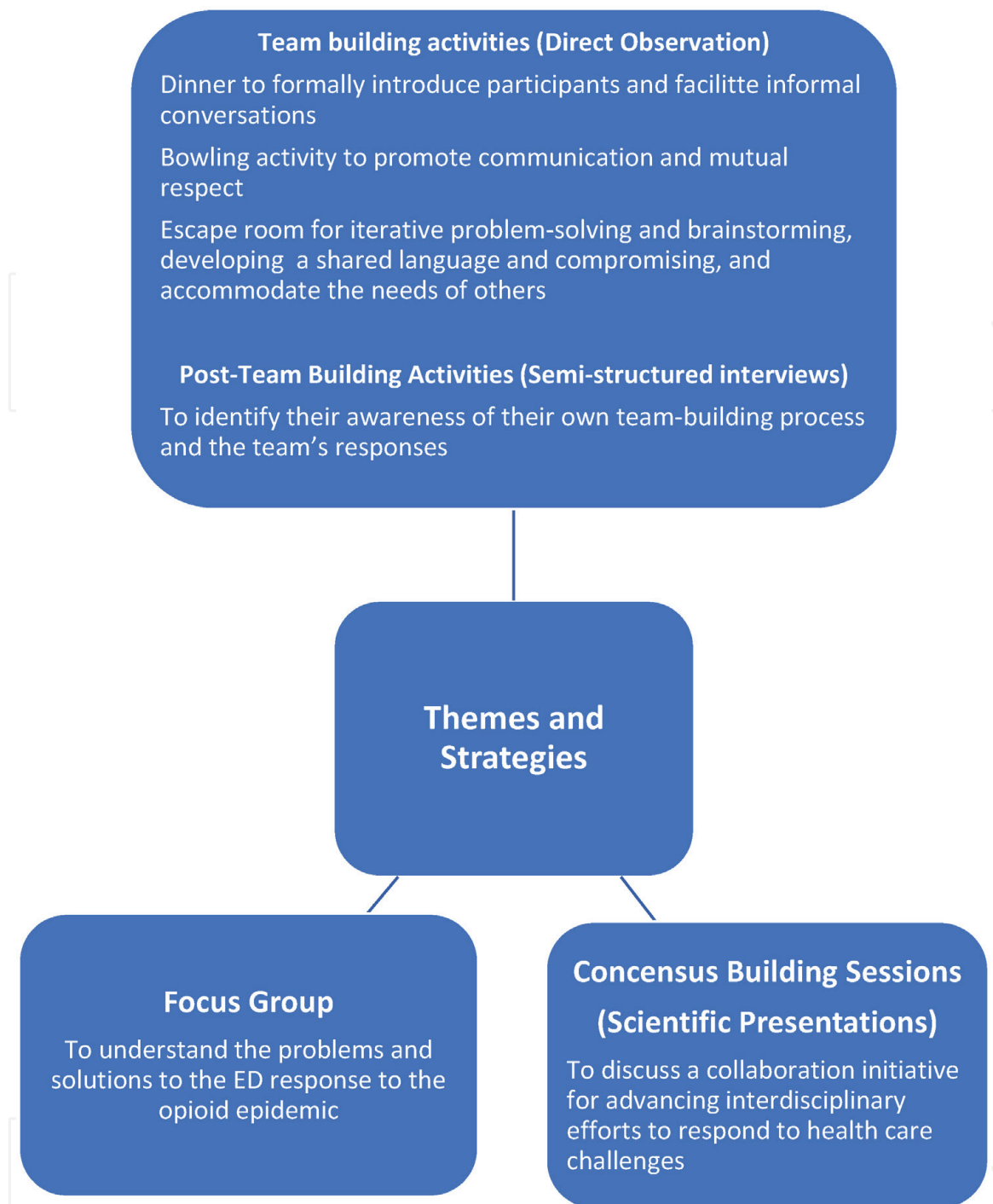
3.3 Team building activities

During 2016 and 2017 the team development activities were both virtual and in-person. These structured activities included 1) interacting in a bowling activity to promote communication and mutual respect through positive competition, and 2) engaging members in an iterative problem-solving team-building activity to promote brainstorming, develop a shared language and compromising, and accommodating the needs of others in the pursuit of solutions. We used ESCAPE rooms for this activity, where the goal is to work as a team to figure out clues and escape the room within a pre-determined time. We relied on direct observation during and semi-structured interviews after team building activities with individual team members to identify their awareness of their own team-building process and the team's responses. The deliberative sessions, following team activities, allowed us to develop shared goals based on the interdisciplinary work and understandings of the potential paths to achieve these goals, and ultimately increase the cooperation as a team as suggested in Hall et al. [5].

3.4 Focus group

We used a focus group and a deliberative session to discuss iterative findings from original research (findings from survey research on the ED). The focus group comprised of six participants (social work researchers, social work research assistants and a project coordinator, a social worker/clinical psychologist, research assistants, and a physician), all of whom participated in various team-building activities. Our scripted questions focused on understanding the problems and solutions to the ED response to the opioid epidemic, with consideration for the diverse background, education, and training of participants. We also interviewed ED physicians from the LAC+USC Medical Center. This allowed us to frame the problem and

Team building activities (Direct Observation)

Dinner to formally introduce participants and facilitte informal conversations

Bowling activity to promote communication and mutual respect

Escape room for iterative problem-solving and brainstorming, developing a shared language and compromising, and accommodate the needs of others

Post-Team Building Activities (Semi-structured interviews)

To identify their awareness of their own team-building process and the team's responses

Themes and Strategies

Focus Group

To understand the problems and solutions to the ED response to the opioid epidemic

Concensus Building Sessions (Scientific Presentations)

To discuss a collaboration initiative for advancing interdisciplinary efforts to respond to health care challenges

Figure 1.
Data collection schema.

solutions from different interdisciplinary perspectives and find ways to integrate these different perspectives into an innovative, coherent, and potentially effective approach to the problem.

3.5 Consensus building sessions

In line with findings showing that time and space are key elements for creating interdisciplinary research collaborations [11], the team (5 to 9 members) met in-person once per month for 1–2 hours for 8 months at different locations. These meetings included a scientific meeting and a consensus meeting, where we brought together leaders from academic and health-systems backgrounds to discuss a collaboration initiative for advancing interdisciplinary efforts to respond to health care

challenges, including the current opioid epidemic. Each meeting was structured to give members the opportunity to communicate their disciplinary perspectives and experience, highlight common ground, and create shared language and knowledge. Given research suggesting that off-campus meetings, i.e., off-sites, were helpful in the implementation phase to minimize distractions while assessing study progress [5], we held several in-person meetings and activities in an off-campus location. This approach provided information and context regarding individual and team problem solving.

We conducted additional analysis of transcripts from an interdisciplinary symposium, referred to as the health systems science meeting. This allowed us to integrate organization and implementation science and understand how these sciences can form a foundation for an institutional response to the opioid epidemic. The goal was to focus on areas shown by research to be associated with team science, identify barriers and facilitators, and use learnings to develop team interdisciplinarity.

We also created a database using reports written retrospectively by team members working together on a pilot study for assessing the process of becoming interdisciplinary when responding to ED actions for addressing the opioid epidemic. This qualitative analysis outlines the experiences and observations the team members had in participating in a series of activities that progressed from unstructured to structured activities.

The goals of assessing the team building process were to: 1) qualify the collaboration between social work, nursing and medicine (for example, we assessed team members' perception of the process of moving toward a interdisciplinary approach. We relied on semi-structured interviews to examine perceived change in exchanging disciplinary knowledge and contributing toward the research goals), and 2) record group activities that successfully contributed and those that did not contribute to team progress (we compared direct observation reports of team building activities such as team bowling and analysis of semi-structured interview data).

3.6 Analytical strategy

To study team processes, two Ph.D.-level researchers and a doctoral student observed and documented team interactions. These included in-person meetings and activities, phone conversations, and e-mail exchanges. All interviews and focus groups were recorded and professionally transcribed. Data was kept strictly confidential based on the original (2016) and revised human protection protocol (IRB # RC010001). Two doctoral level and one graduate level raters analyzed transcripts with InVivo software using template analysis, a set of techniques for thematically organizing and analyzing textual data via thematic codes that are defined a priori as critical to study questions and inductively through the coding process. The research team identified the most common and prominently expressed codes and themes that emerged from the interviews. When these codes and themes were not clear, raters discussed them and reached consensus on the best description. Themes were validated with outside social work and medicine researchers.

3.7 Results

Our findings emphasize the contributions of interdisciplinary teams toward ED response to the opioid epidemic, after exposure to processes that facilitate

and promote the formation and effectiveness of a more integrated interdisciplinary team. The process of team building developed in this study was engaging and fostered professional relationships in a setting outside of work. Participants reported that the three iterative team-building activities—dinner, team bowling, and escape rooms—were valuable to team building in that they were critical to the team's connection and knowledge-building experiences. Dinner introduced participants to each other, bowling helped them become more acquainted, and the escape rooms taught them problem solving and interdependence. Participants were motivated to meet new team members and become more familiar with those they already knew. Through these encounters, teammates were able to discuss with each other the details of their projects related to the opioid crisis and opportunities for collaboration that will foster improved care practices for opioid use disorders.

Data from focus groups, team building activities, and scientific presentation provided two perspectives on the response to the opioid epidemic problem. The focus group provided a point of view that is more implementation-based, while the Health Systems Science and interdisciplinary symposium perspective provided a multi-theoretical explanation of how systems can be implemented at different organizational levels. Throughout the transcripts, six overarching themes emerged that provide insight on the challenges practitioners in the ED and organizations face, while dealing with the opioid epidemic (see **Figure 2**). These themes were: need for interdisciplinary understanding of substance abuse and mental health; interdisciplinary approaches to fight the opioid epidemic; prescribing opioids and collaboration; the role of interdisciplinary team composition and team effectiveness; the role of professional identity to contribute to interdisciplinary research; and building effective organizational relationships.
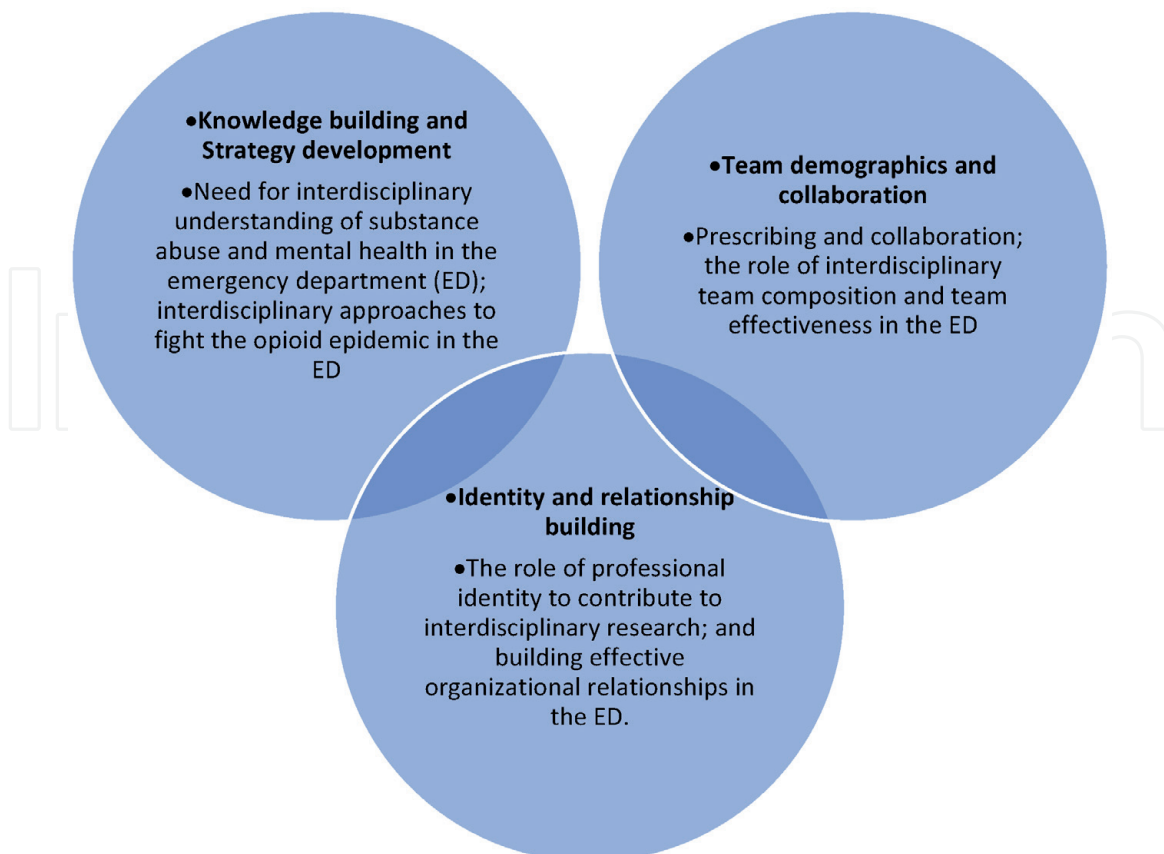
Figure 2.
Interrelated themes.

4. Knowledge building and strategy development

4.1 Interdisciplinary understanding of substance abuse and mental health in the ED

Participants from different disciplines express to different degrees that the complexity of substance abuse and mental health disorders is not always properly understood in the ED. One participant explains the importance of having other experts in the ED to understand brain chemistry and social conditions by noting, "addiction is now understood as a brain disease for which we have brain medication." She further elaborates that "conversations need to be had with ER physicians to emphasize drug addiction as the underlying problem to the presenting issue." Another participant explains that some "patients who have substance use and mental health issues also have current life devastation issues, like they have no friends anymore because they alienated everybody. So now [they're] here in the ER. They will come in the ER every other day for no other reason other than opioids." Substance abuse is a complex issue that requires more time than can be provided in an ED visit.

One participant explains that other experts can help ER physicians "understand all the different components of substance abuse". This participant further explains that ED practitioners "don't care about reasons that contribute to the problem. I think, they think, if they can see the person, treat the person and get them out and now they are not causing harm but helping them."

ED physicians may also have distorted expectations when treating someone with an opioid addiction. One participant explains that opioid treatment outcomes have to be "clear, relevant and realistic… Physicians want to see 100% of patients who start buprenorphine do so when completely sober. And you're like that's just not a realistic thing." The ED physician supports this claim, stating, "if physicians believe that patients cannot get better there is hopelessness of engaging in other options." Having unrealistic expectations of how well someone will do when treated with MAT goes hand-in-hand with not being familiar with the science of opioid addiction, coupled with the mental health and other co-occurring conditions that challenge the effectiveness of treatment. Enhancing physician knowledge of opioid addiction and related conditions, supported by the availability of practitioners from other specialties, is therefore an important aspect of addressing the opioid epidemic.

4.2 Interdisciplinary teams, networks and training to fight the opioid epidemic in the ED

A running theme throughout the focus group discussions is the value placed on being part of an interdisciplinary team or network. One participant said that she "extremely values being part of the team." She adds that she is "very big on collaboration. I think no one knows everything and when people come together with their different level of experience of expertise you see the best results whether it's implementing new policy or the care of an individual." Some participants noted how interdisciplinary education should be part of the curriculum in medical school. As an example, participants highlighted the interdisciplinary curriculum of the geriatric program, which incorporates dental services, occupational therapy, physical therapy, social work, and physicians. Oncology was cited as another interdisciplinary field, with one participant noting the value of social work in it: "I think that's also true in palliative care. They really value the social worker."

Although working together in an interdisciplinary team appears to make sense, one participant said that such a perspective is often lost in medical school, where medical doctors may not learn how to work with other to have the most impact on health …"So maybe we should bring in that model [to medical school] of interdisciplinary and the social work theory of empathy, active listening, and put them together in a class, presentation or workshop."

The dual benefit of interdisciplinarity was also highlighted. That is, conversations should be initiated with ED providers or seize the opportunities in the ED to demonstrate that interdisciplinary teamwork benefits both the patient and the ED prescriber. The ED prescriber's network may also help ED practitioners increase their understanding of the opioid problem. According to the presenters describing the process of seeking advice, "It depends on the qualities of the expert, the quality of their expertise, how accessible they are to you, it depends upon your needs as an advice seeker, and a lot of it depends on accessibility." These networks can be defined "in terms of physical proximity, social proximity, or history of prior relationships." Findings from the scientific presentation suggest that quality of expertise and accessibility to the expert were significant indicators when predicting the presence, absence, or a tie of a network formation. Furthermore, the presenters noted that "faculty experts and supervisors were more likely to be new sources of advice for clinicians over time. Also, being in the same organization and being from the same discipline were significant predictors of the tie formation." Participants also highlighted the effectiveness in working across disciplines and departments. Every participant has had an opportunity to work with colleagues from other disciplines, and clearly acknowledge how the depth and quality of conversations are enriched by collaboration.

5. Team demographics and collaboration

5.1 ED practitioners' prescribing and collaboration

Participants highlight that the ED is a major player in the prescribing of opioid medication and would benefit from greater collaboration from other disciplines. For example, one participant investigated whether differences in belief systems exist among ED practitioners, affecting how often they prescribe opioids. The participant noted that ED practitioners rely on a set of values to determine when to prescribe, with ED doctors "making decisions in a different way" when treating patients who show in the ED seeking opioid prescriptions. ED practitioners may assess the deservedness of patients, based on their race, language, complaint, etc.

One participant offered a physician's perspective, explaining that "most doctors do not confront patients about their opioid use, and have a conversation about other options. Almost never happens, it requires too much energy. Doctors have two easy ways out, kick them out of the ED or give them the pills."

ED practitioners may have continued the problem by refilling narcotics prescriptions. "That has been our response to this problem," one participant states. One ED leader reports that opioids and antibiotics are prescribed 80% of the time when pain is the chief complaint. Participants say that in many instances ED providers "feel they don't have the background or the experience" to prescribe opioids. They further state that "right now we don't have a current approach to prescribing opioids that includes providing incentives to [ED providers]." One participant suggests working collaboratively with other professionals on "the process and structure and referral to treatment, rather than attempting to change prescriber behavior." "Doctors want to solve the problem and they wonder about

the result." This participant explains that even when prescribing an opioid like hydrocodone, physicians focus on the number of pills prescribed, usually prescribing a lower number of pills, "12 pills from 20-30." This participant also feels that "there is a sense of helplessness around responding to addiction requiring other professions to improve treatment effectiveness." This suggests ED practitioners' need for interdisciplinary approach to support each other and help improve treatment.

Moreover, this participant explains that providing Medication Assisted Treatment (MAT) requires an interdisciplinary team effort, but currently is disjointed because "ED doctors' structure of work is in shifts. They go away!" ED physicians and ED practitioners understand there is a real opioid abuse problem; however, they do not have the time, energy, or even the incentive to treat ED patients from start to end. Creating dialog with ED providers seems to be key to educating them and changing their opioid diagnostics and prescribing behavior. Moreover, ED providers need to be engaged carefully otherwise "they get really defensive and it's not a very productive conversation." The consensus among participants was that by creating dialog between ED practitioners and interdisciplinary experts on opioid addictions and treatment, ED prescribers can move away from refilling prescriptions to focusing on treating and resolving some of the underlying issues of substance abuse.

Participants described several ways in which interdisciplinary collaborations can help ED practitioners improve their opioid prescriptions. One expert physician noted that one traditional approach is to become familiar with the state of the science regarding opioid addiction and treatment, coaching prescribers and telling positive stories. By understanding current methods of opioid addiction treatment, ED prescribers will gain confidence in their ability to properly treat opioid addiction, rather than continue to refill opioid prescriptions. One participant explained "coach[ing]" a senior ED attending physician through the decision process when a patient presented to the ED with opioid withdrawal symptoms. "Telling positive stories" of how ED practitioners saved their patients' lives by providing the opioid treatment they needed. This participant explained that "[ED practitioners] come on board once they see that it works or when they are shown evidence or support. Then it makes them a little more open." Participants suggested disseminating these types of success stories visually, perhaps through documentaries that retell the struggles and success of opioid addiction.

However, some participants noted that there is pushback against having ED practitioners initiate individuals with chronic opioid abuse on MAT. When they discussed poignant findings from an exploratory survey in the ED, "33% strongly agreed or agreed while the rest were uncertain to initiate MAT for OUD." In some instances, the hesitation to start MAT is based on not knowing if the patient will "follow up with treatment" or the provider being uncertain if treatment "will cause harm." But, as one participant stated, "if [they] read the papers and the science behind it, the ED doctors should all be like of course we're going to do this life saving treatment [initiate MAT in the ED]."

The lead presenter in the health systems science meeting explained that organizations can respond to change. They "can be proactive in basically having the systems in place to respond to that change in terms of leadership, management practices, [and] structures." The presenters further explain that:

Based on the systems approach, organizations are made up of the sub-systems and it is important that we engage these different sub-systems, so in the case of hospitals, of course, management vs. clinical, a lot of the cultural competency work started more on the clinical side and often times, the management was not engaged. It is important to have those two components together.

Overall, behavioral change among ED practitioners will take much effort, including changing the institutional culture to be less siloed and more based on collaboration, supported by dissemination of information on evidence-based treatment practices. At the institutional level, changing the ED prescriber's behavior may happen through the collaboration among professionals to adopt frameworks of change, such as the "Causal Model of Organizational Performance and Change." Although the focus has been on the behavior of the ED prescriber, the overall responsibility of fostering change should also be at the institutional level.

5.2 Team composition and effectiveness in the ED

Working in interdisciplinary teams in healthcare was deemed instrumental to new treatment implementation and the health outcomes of patients. However, teams were required to have certain characteristics in order to be effective. According to one participant in the interdisciplinary symposium, teams are described as bounded: "who's on the team and who's off the team." Teams are also interdependent: "there's a reason to be together and work together." The presenters further explained teams as having "some stability to the membership over time, norms of conduct, and some authority for executing work processes so they can't just be mindless in terms of just executing what leadership, and some process for them to determine how to do the work."

Team size was also considered important, especially for teams in healthcare. The presenters explained that "how large the team is can affect its effectiveness or affect the implementation of best practices. When teams become too heterogeneous it can be challenging for teams." Similarly, the presenters explained that too much diversity in the team is associated with worse outcomes for team functioning. The presenters also noted that "when professional identities are too disconnected, it's hard to find a common ground." Moreover, connections between teams, team climate, relational coordination, and psychological safety can influence the effectiveness of the team. The presenters suggested that if healthcare teams are structured appropriately, "they can yield all the things we want: implementation of evidence-based practices, the effectiveness of these practices, and improved patient care." Participants also noted that team science suggests that feedback should be provided to teams so as to make them more effective. In healthcare, patient instant feedback from a survey is not generally enough to determine team effectiveness. Overall, the impact healthcare teams have on implementation and patient care is highly dependent on the membership composition and purpose. Additionally, feedback loops, rather than a linear approach to providing feedback should be a part of efforts to improve how effective teams are in providing treatment.

6. Identity and relationship building

6.1 Professional identity and contributions to interdisciplinary research in the ED

Professional identity was discussed among the participants as it relates to the work they are doing and that needs to be done. Participants describe themselves as social workers, nurses, researchers, and physicians. They describe how their prior training and experiences help them effectively function in their current capacity. For instance, a participant who currently functions as a researcher describes formally working as a therapist and "dealing with a lot of clients seeking services for mental health needs." He acknowledges that mental health disorders are prevalent

among those with substance abuse disorders. The same participant bridges the science of social work with the service provided. He states, "we know the research. We know what people need. We know certain things don't work. So, let's try to get involved in that."

The participant's perspective highlights the extent to which discipline-specific training informs knowledge and the conceptualization of one's role in the care delivery process, and within teams. These views are directly related to their value and contributions to an interdisciplinary approach to opioid addiction treatment. As a social worker, he understands how and where he fits into the spectrum of service delivery and treatment. Other participants in the field of social work share similar views. They have a "deep concern for not only understanding but solving issues that affect the most vulnerable. I try to do that through research, through understanding and through interventions." Another participant also in the field of social work adds that she "provides the best services possible to our consumers by being able to connect them with resources, housing, medication, case management therapy and everything." In general, social workers seem to have a genuine sense of service for those in need.

Interestingly, one participant who is a physician by training identifies as a physician only at work and endorses a different view of health care or special populations elsewhere. She states, "I don't really feel like that's my identity outside of work. I'll be like, oh, I work at a hospital, but as a physician at work, I guess, I have mixed opinions." She further highlights the characteristics of taking a non-traditional role as a physician by explaining, "I think of myself more as like an implementer, operation person and trying to take the tools and the knowledge of research and put that into practice, and trying to build a connection between research and what actually happens in real life." She understands that she can use her position as a physician to influence the desired change. She states that "there is a lot of opportunity for leadership and what I consider the right thing to do." She further explains that as a physician she cannot be the solution, but instead part of the solution, reiterating the importance of an interdisciplinary team approach.

7. Building effective organizational relationships in the ED

Building organizational relationships across disciplines has proven to be challenging on two fronts. First, individuals do not always know how to effectively build relationships across professions or disciplines. The importance of building relationships is not always fostered or even emphasized in medical school, for example. One participant explains, "I don't think we're given a lot of tools to understand how to build relationships. And then when you go to medical school it is very much a competitive thing as opposed to a collaborative thing. And I think that's changing slowly overtime, but it's one that the admission process seeks out to identify. I think you are studying with a baseline of students who tend to be like the gunner student in the class whose studying at four in the morning as opposed to building relationships."

Second, building relationships takes a significant amount of time. Even when a relationship is established with key figures, those individuals have to be willing to support new ideas. As the above participant notes, staff "wanted to do this [team building] three or four years ago, but I didn't know the pharmacy director. I didn't know people. To be like, hey, don't you think this would be cool? I think right now it's working and I think we're right at the point where I could give a lecture and the receptive 33% audience member says they're going to call me next time they have a case. And they called me the next time they had a case and we treated and they saw the miracle that happened when you actually treat substance abuse." Building

relationships may be easy for some but challenging for others. In health care, workers are interdependent. Having the emotional intelligence to navigate different personalities can be as important as having the medical knowledge to save lives.

Another participant further explains that even after relationships are built, the relationships must be continuously nurtured. Individuals must build credibility among their colleagues, especially among those who are more resistant to changing the way they work. The presenters explain that "effective leadership can help build effective collaborations through influence and expert guidance." But it takes time to develop the leadership necessary to influence relationships. At the ED, building effective organizational relationships requires leaders who cultivate relationships over time and by gradually gaining buy-in from employees. "It is a trickle-down effect from top manager's leadership to direct service providers" and rely on this and other networks to improve their work. One presenter stated that "social networks are important for implementation, because these ties are conduits for information, for expertise, for social influence. A lot of different implementation strategies leverage these social networks. We try to find an opinion leader and have them exert their influence within an organization or a champion." One participant illustrates how their team is already doing this.

> *Isn't that kind of what we are doing? I mean how we have built a relationship with two leaders in the ED, a physician and a head nurse who are very involved in the ED and very passionate about this topic. It kind of helped us get in so we could build relationships with other nurses and physicians. They see us when we are going on Sundays. They say, hey you guys are here again, let me get some people for you. So, kind of just making ourselves present there so they get more comfortable knowing that we are there because we care about this topic. And then I'm sure they'll want to see us later and we can present it to them. I think we kind of started that and can continue building on it. "Building organizational relationships will facilitate the overall implementation of MAT. Over time, these relationships will be instrumental in influencing not only ED practitioners, but will have a greater influence at the organizational level."*

8. Discussion

The opioid epidemic poses several challenges for health professionals and health service delivery systems. The current study sought to understand the team process necessary for researchers to be more effective in tackling this wicked problem. From a systems perspective, the opioid epidemic can be ameliorated through a number of approaches that require high-level coordination and execution among teams. These include changing the way opioids are prescribed, how substance abuse is defined and treated, how collaborations across disciplines take place, the composition and effectiveness of healthcare teams, understanding professional identity, and building organizational relationships to improve collaboration and health outcomes (see **Table 2**). These are the themes identified in this study, but also consistent with the National Institute on Drug Abuse (NIDA) priorities to combat the opioid epidemic [12], as well as the NIDA's three-prong approach—reducing prescriptions, enhancing access to treatment and preventing overdoses—to address this epidemic [13]. Inherent in these priorities are interdisciplinary team approaches to effectively responding to the opioid epidemic.

The team-building activities undertaken in this study supported the key aspects of the cultural exchange framework, and are aligned with evidence informed approaches. These were 1) accessibility to one another; 2) a sense of mutual respect;

Themes	Strategies
Need for interdisciplinary understanding of substance abuse and mental health	Enhance physician knowledge of opioid addiction and related conditions, embed practitioners from other specialties who allow for a holistic approach to addressing the opioid epidemic
Interdisciplinary approaches to fight the opioid epidemic	Create an environment for collaborations fosters depth and high quality of conversations
Prescribing opioids and collaboration	Develop and implement institutional level policies and practices
Role of interdisciplinary team composition and team effectiveness	Determine the optimal mix of diversity in a team, and put in place feedback loops, rather than a linear approach to providing feedback
Role of professional identity to contribute to interdisciplinary research	Create a culture where problem solving, and professional identities are framed within the context of interdisciplinarity (professional identities are a key part of addressing operational problems)
Building effective organizational relationships	Provide opportunities for building leadership skills, and developing emotional intelligence

Table 2.
Themes and strategies.

3) creation of a shared language; and 4) willingness to compromise/accommodate the needs of others [8]. These activities increased access for all team members to discuss a variety of issues related to ED responses to the opioid epidemic. Team leaders created a sense of mutual respect across disciplines, and activities promoted the co-creation of language to define challenges and solutions for the ED to diagnose and treat OUD. The structured problem-solving activities, as well as the scholarly presentations and consensus group, allowed members to compromise with each other and accommodate new information to lead an effective interdisciplinary collaboration.

Member interactions ranged from building personal connection, sharing world views, to professional and scientifically focused detailing of strategies to break down the problems into different components. These team interactions helped identify barriers and facilitators to using the Science of Team Science framework. For instance, it was clear that physicians, nurses and social workers have and bring unique knowledge and competencies to the team (intrapersonal) that could either disconnect or expand the team knowledge. Yet, communication, connection, and shared knowledge among team members improved greatly with exposure to the team building activities (interpersonal).

8.1 Limitations

We should note limitations of the present study. The study used a small sample of researchers from different disciplines to obtain a deep understanding of how team building may enhance problem solving. Although derived from a small sample, the qualitative data were not intended to be representative of interdisciplinary teams, or researchers in ED systems. However, the themes that emerged from this work are consistent with concerns in the field [12, 13]. Furthermore, the comprehensive and multimethod approach to data collection used in this study is consistent with other research in behavioral health [14, 15]. Our results did not provide information about concrete outcomes, but rather to team building process generally, as intended. The physical environment was a barrier to team building – traveling in a large metropolis reduces interactions. The societal and political norms were however not evident. Participants discussed them in terms of hospital

policies that prevented new medications from being included in prescribing schedules. Finally, technological issues were important in improving connection. Using video communication and presentations as well as text messaging reinforced the initiative. Future studies can build on our results and address these limitations by examining how each of the team building strategies we implemented influence the quality of decision making and effectiveness of problem-solving abilities of the team, and ultimately opioid use disorder treatment practices.

8.2 Conclusions and implications

This study highlighted the importance of building teams from a personal and general skill level to a more refined disciplinary knowledge and competencies. The team-building process appeared to be significant in building knowledge and connecting members at personal, professional, and disciplinary levels. Participants appreciated this level of connection to support their understanding and problem solving of the opioid epidemic. Health care systems should consider investing (i.e., funding, rewarding, structuring) in team building among experts from different disciplines to improve ways in which the ED can reduce risk of opioid use. Findings from this study have implications for investing in team-building activities to improve interdisciplinary approaches to wicked problems. In this process, it is important that each member of the team is meaningfully included, as well as empowered by the team process and to contribute their unique disciplinary approach. This is especially conducive to developing solutions to pressing issue of building ED capacity to respond to the opioid epidemic.

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Conflict of interest

The authors declare no conflict of interest.

Abbreviations

ED	Emergency department
LAC + USC	Los Angeles County + University of Southern California
MAT	Medication assisted treatment
OUD	Opioid use disorder
SciTS	Science of team science

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