



# Health care ethics ECHO: Improving ethical response self-efficacy through sensemaking

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## Abstract

In clinical practice, evidence suggests that teaching ethics using normative ethical theory has little influence on the ethical actions of providers in practice. Thus, new training methods are needed that improve clinician response to ethical problems. A sensemaking approach to ethics training has demonstrated promise as an evidence-based pedagogical method to improve ethical reasoning and response. Project ECHO (Extension for Community Health Outcomes) is theoretically linked to improved sensemaking. This study examines the effectiveness of ECHO and training in use of sensemaking approaches to ethical response by clinicians. A quasi-experimental design study using univariate linear regression was used to examine the effect of the three types of ethics training on ethical response self-efficacy scores, while controlling for participant characteristics of years in practice, discipline and sex. We found evidence that training in sensemaking through participation in ECHO promotes improved ethical response self-efficacy of clinicians. However, results also suggest that a traditional ECHO format that does not explicitly introduce sensemaking strategies into the training does not result in the same learning outcomes as measured through an ethical response self-efficacy survey. This study found important preliminary results to support use of sensemaking approaches in clinical ethics training.

**Keywords** Sensemaking · Extension for Community Health Outcomes (ECHO) · Ethics education · Clinical ethics education

## Introduction

Clinical ethics discourse and related traditional educational models are dominated by normative, rule-based theory. Typically, these theories are linked to determining the

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rightness of an action and focus on either the act itself (deontology), or the consequence of the action (teleology). Common approaches to clinical ethics training include teaching the principles of biomedical ethics and application of professional codes of ethics in didactic format. These methods provide the learner with an understanding of the ethical norms that are valued by health care professions, but they do not facilitate learning about how to carry out an ethical action. Even though there is acknowledgment of the complex skills required to navigate ethical conflicts in practice settings, much of the clinical ethics pedagogy focuses on principles (respect for autonomy, nonmaleficence, beneficence, and justice) and other normative theory-based teaching strategies, which do not typically inform or shape future practice decisions (Bertolami 2006; Crutchfield et al. 2016). From a pedagogical perspective, understanding these theories and related codes of ethics should improve the clinician's ability to identify and resolve ethical conflicts. However, decision-making models grounded in normative theories do not account for the complex organizational contexts that contribute to ethical problems in practice, thus limiting their application to decision making in clinical practice. On the other hand, sensemaking that is grounded in information gathering, integration of divergent views, and understanding the crisis, offers a valuable and viable approach for promoting ethical action in clinically complex situations (Johnson et al. 2014).

'Sensemaking' is an organizational studies theory that provides a framework for responding to unanticipated complex situations and provides an actionable process for organizing and responding to events as they unfold (Weick et al. 2005). Integration of the sensemaking theory into ethics instruction has shown promise as a means to translate ethical intent into ethical response (Brandt and Popejoy 2020). Case-based ethics instruction that includes contextual elements has been shown to facilitate sensemaking processes that improve ethical decision-making (Bagdasarov et al. 2013; Brandt and Popejoy 2020). While cases are often utilized to teach clinical ethics, they do not always include detailed information about the social, environmental, and organizational factors that may influence decision making. Real cases that are nuanced and complex provide a more accurate picture of ethical challenges that are encountered by clinicians in practice. Specifically, the context and competing perspectives of a case can obfuscate the ethically supported course of action and thus, it is important that future practitioners have experience in navigating complex clinical situations reflective of real practice. Since following clinicians in practice to provide "just in time" ethics education related to these complex cases is not practical, exploration of innovative training methods that capitalize on instruction linked to actual patient cases is indicated.

### **Relationship between ECHO and Sensemaking**

Project ECHO (Extension for Community Healthcare Outcomes) uses videoconferencing technology to connect multidisciplinary primary care teams simultaneously to engage in case-based learning and discussion (Arora et al. 2016). ECHO uses informal discussions and guidance, offering advantages of learning through authentic cases, focusing on the current needs of participants and building on participants' current knowledge (Komaromy et al. 2017). ECHO situates learning within authentic professional practice and workplaces, thus enhancing the likelihood that newly acquired knowledge will change professional practice (Arora et al. 2017; Mazurek et al. 2017). ECHO has demonstrated success in helping health care providers gain new knowledge, increase confidence and improve

attitudes towards clinical conditions (Colleran et al. 2012; Wood et al. 2016). Participation in ECHO has also resulted in a significant increase in self-efficacy of clinical providers (Arora et al. 2016; Becevic et al. 2016; Mazurek et al. 2017). With regard to integration of sensemaking theory into clinical practice, ECHO shows promise in helping clinicians learn how to address unexpected clinical situations, which embraces the properties of sensemaking over decision-making (Potts et al. 2017). This sensemaking approach closely articulates with promotion of ethical response as it reframes ethical challenges to good people trying to make sense of complex situations as opposed to bad ones making poor decisions (Weick et al. 2005).

In clinical ethics instruction, the intended learning outcome is to improve the ability of clinicians to respond to ethical conflict. Since ethical conflict is often precipitated by unexpected events, sensemaking is a potentially valuable tool in cultivating behaviors associated with ethical response. In particular, using ECHO grounded in sensemaking properties to deliver clinical ethics training will likely increase clinicians' ability to respond ethically to unexpected events in clinical practice. Because clinical ethics involves navigating viewpoints of multiple stakeholders in complex environments, and rapidly changing situations to make life altering health care decisions, case-based ethics discussion can improve ethical reasoning of participants (Bagdasarov et al. 2012; Peacock et al. 2013). Ethical conflict typically presents when a clinical decision is precipitated by an unexpected event. For example, the unexpected event could be an atypical response from the patient/family, an unanticipated clinical outcome, or an unforeseen tragedy. Sensemaking is an optimal approach when dealing with unexpected events as it is the process by which people give meaning to their collective experiences, especially when those experiences do not adhere to the norm (Weick and Sutcliffe 2015).

When practitioners are faced with difficult ethically charged situations, they will often act in ways inconsistent with what is ethically or clinically indicated as they are trying to appease patients or avoid conflict (Ginsburg et al. 2014). This is why clinical decision-making models are ill-equipped to deal with these complex situations as they primarily rely on objective data generated from looking at typical cases. They do not account for unexpected or atypical situations that fall outside of the norm. Therefore, teaching clinical ethics through applying sensemaking models to actual patient cases may better prepare clinicians in addressing complex and unique ethical conflicts in practice (Browning 2012). In contrast to traditional pedagogies that use linear, normative approaches to ethical decision-making, sensemaking provides a more fluid approach. However, there is limited understanding of how sensemaking properties are elicited during the ECHO process. With this in mind, this study examined whether ECHO participants would engage in sensemaking naturally to improve ethical response, or if intentional incorporation of a sensemaking framework for ethical decision making increased the likelihood of an ethical response.

## Methods

The quasi-experimental study used a series of univariate analyses of variance (ANOVAs) to assess the relationship between the type of ethics training (independent variable) and ethical response self-efficacy survey (dependent variable), when accounting for participant characteristics of years in practice, sex and discipline. The study also

adjusted for number of Health Care Ethics ECHO attended. This study was approved by the University Health Sciences Institutional Review Board.

### Study setting and sample

The sample was a non-randomized, convenience sample of Health Care Ethics ECHO participants and a control group consisting of clinicians who did not participate in ECHO. Participants were primarily from a Midwestern and Eastern state, however there were a small number of participants from across the country. Healthcare providers from diverse disciplines who practice across the two states were recruited for participation in the Health Care Ethics ECHO and other providers joined via word of mouth. The geographic focus on these two states was driven by the participation in two different telehealth networks as part of a larger joint Health Care Ethics ECHO initiative.

Recruitment strategies for ECHO participation included personal emails from the core clinical ethics teams located at the network sites. Participant characteristics were the same for each group, and included those with varying years of practice experience, men and women as well as clinicians from different disciplines, with the largest percentages reflective of those in the nursing profession. The group characteristics and recruitment and study procedures are outlined below.

- Group 1- Non-ECHO participants (Control). This control group included participants who did not participate in an Ethics ECHO.
- Group 2-Traditional Health Care Ethics ECHO participants (Traditional ECHO). Group was introduced to a curriculum that included a case presentation and a didactic on an ethics topic, however there was no intentional sensemaking component offered during these sessions.
- Group 3- Health Care Ethics ECHO with Sensemaking participants (Sensemaking ECHO). Participants of a modified Health Care Ethics ECHO, where in addition to the a case presentation and a didactic on an ethics topic, a sensemaking component was integrated into the didactic and applied to cases during these sessions.

### Measures

Often evaluation of clinical ethics education focuses on knowledge acquisition. However, when assessing the effectiveness of the training, this study focused on ethical response. In order to determine behavioral learning outcomes, the chosen measure was a self-efficacy scale developed to specifically assess ethical response. Self-efficacy is often used as a measure for clinical ECHOs to determine perceived changes in practice and behavioral outcomes (Damian et al. 2020; De Witt Jansen et al. 2018; Mazurek et al. 2020; Serhal et al. 2018). Self-efficacy relates to the individual's belief about his/her abilities of organizing and controlling actions leading to achieving the specified level of performance to change human behavior (Bandura 1995). According to Bandura's social cognitive theory, perceived self-efficacy is a primary indicator of human motivation and future action (Bandura 1995; Janiszewska et al. 2017; Luszczynska et al. 2005; Zalewska-Puchała et al. 2007). Similarly, ethical behavior requires individuals to feel as though they have the ability to carry out the intended

action and that the action will result in the expected outcome. In order to measure self-efficacy as it relates to specific behavior, the questions must be tailored to the particular domain of functioning (Pajares and Urdan 2006). The self-efficacy domain of functioning for this study relates to perceived ability to navigate ethical conflicts even in the face of external pressures. In particular, even if a person can identify the ethical course of action, if confronted with competing external pressures, a “good” person will often act unethically (Bazerman and Gino 2012; Drumwright et al. 2015; Gaspar et al. 2015; Milkman et al. 2008; Thronicker 2016). The ethical response self-efficacy scale focuses on the provider’s perceived ability to execute ethical action even in difficult situations. This scale focuses on the behavior (action taken) as opposed to the recognition or identification of ethical conflict and supported actions. Short of observable behavior, assessing perceived self-efficacy of a specific behavior provides a good indication of the actions and behaviors that a person will display (Bandura 1995). In this study, the specific behavior examined is the participant’s ability to respond ethically measured by the ethical response self-efficacy score.

Questions for the ethical response self-efficacy survey were developed by the Health Care Ethics ECHO hub team clinical ethicists, who have specific training in bioethics and clinical ethics consultation as well as experience teaching clinical ethics content. A consensus approach was used to confirm use of the agreed upon questions. The questions were then sent to the administration at the telehealth network for final approval to be used as survey questions prior to being disseminated via email to Health Care Ethics ECHO participants. A copy of the Ethical Response Self-Efficacy Survey is provided in Addendum 1.

We hypothesized that clinicians who participated in the Sensemaking ECHO would demonstrate higher self-efficacy scores than traditional ECHO participants, who in turn would score higher than clinicians trained in a traditional model, after adjusting for participant characteristics (control). Specifically, we examined (1) the effect of the three types of ethics training on ethical response self-efficacy scores, and (2) the relationship between ethical response self-efficacy scores and method of training, adjusting for participant characteristics of years in practice, discipline and sex. A conceptual model outlining the study interventions is depicted in Fig. 1.

The training content was designed to assess if incorporating sensemaking approaches into clinical ethics education helps foster behavioral skills that reflect the clinician’s ability to respond ethically in practice. Thus, three groups were studied. Group 1, those who only received traditional ethics training, did not participate in a Health Care Ethics ECHO. Group 2, received training in a traditional health care ethics ECHO model. Group 3, not only participated in the Health Care Ethics ECHO, but also received instruction in sensemaking, specifically instruction in the “STICC” Framework: Situation, Task, Intent, Concern and Calibrate. The STICC Framework was chosen as it has been noted to generate a shared understanding among clinical teams in order to improve care delivery (Leykum and O’Leary 2017). The elements and corresponding definitions of the STICC Framework are outlined in Table 1.

By introducing a sensemaking framework into ethics training and case review, clinicians were provided a tool that can be used to guide professional actions. Use of a sensemaking framework like STICC allows individuals to manage unexpected events and organize various demands of a situation into a more orderly set of action-based responses (Weick and Sutcliffe 2015). By using pedagogical tools that promote use of

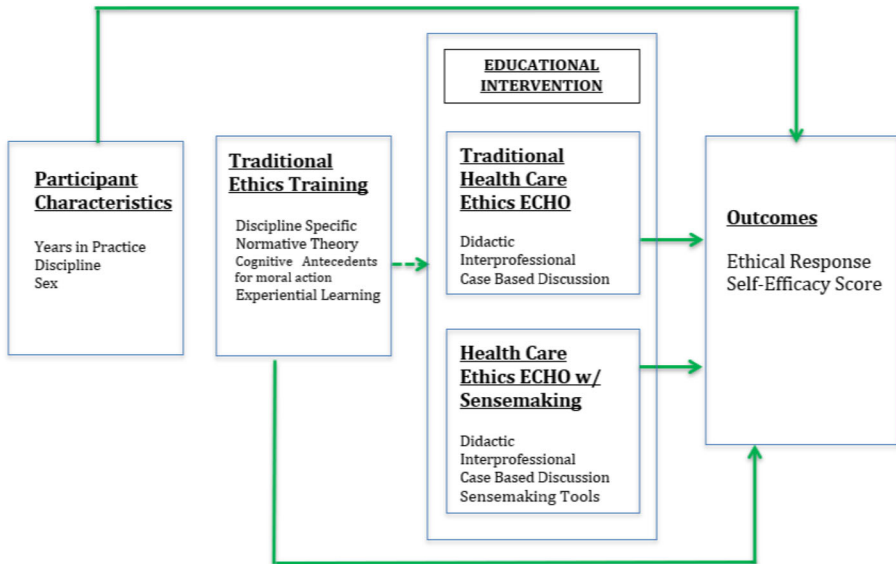


Fig. 1 Intervention Chart

sensemaking when reviewing cases during ECHO, participants are more likely to connect ethical reasoning to an action-based strategy in context.

An ethical response self-efficacy survey was used to assess participants' perceived ability to respond to ethical conflict in practice. The survey was developed by clinicians with specific training in bioethics and clinical ethics consultation as well as experience teaching clinical ethics content. The questions were also reviewed and vetted by the hub-team members of both participating ECHO hub team networks. The outcome variable of ethical response self-efficacy score is numerical with responses ranging on a scale from 1 to 7. Predictor variables include type of ethics training (Control, Traditional ECHO & Sensemaking ECHO) and participant characteristics.

## Data Analysis

The ethical response self-efficacy survey was modified in 2018 to include demographic information. This demographic information included discipline, number of years in

Table 1 STICC Framework

Element	Definition
Situation	Discussion of "here is what we are dealing with."
Task	Assessment of "what are we going to do."
Intent	Explicit, concrete discussion of why the team is embarking a specific diagnostic or therapeutic plan.
Concern	Discussion of "what we need to keep our eye on" or "what we need to look out for"
Calibrate	"Talk to me." Discussion regarding what the team might be missing, what is unclear or not yet understood. If-then contingency statements.

practice, and sex. Health Care Ethics ECHO participants were also asked about the number of Ethics ECHO's attended. Participant discipline was coded into 4 categories, nursing, physician, other and ethics consultant/committee member. Sex was coded as a 1 for female and 2 for male. Secondary to the small numbers for this study, biological sex was used instead of gender to limit the number of variables. The questions resulting in a continuous variable were "how many times have you participated in Ethics ECHO" and "how long have you been in your professional role". Also, in 2018, while the first five questions were kept the same, questions 6–10 were modified to focus on ethical response as opposed to ethical knowledge. Thus, there were missing data related to demographic information and responses to questions 6–10 for those who participated in the Health Care Ethics ECHO prior to June 2018. Therefore, descriptive statistics include mean scores for the first five questions and total mean score on the ethical response self-efficacy survey for all three groups, control, traditional ECHO and the sensemaking ECHO group. Descriptive statistics were run for the Post Hoc groups comparing mean scores on the ethical response self-efficacy survey for all ten questions and total mean score for the non-ECHO control group and all Health Care Ethics ECHO groups combined. Normality was checked for analysis 1 including questions 1–5 by group (Traditional ECHO, Sensemaking ECHO, Control) and for analysis 2 including questions 1–10 by Post-Hoc group (ECHO & Control). Demographics of the groups were compared using a Chi Square test of independence. Differences were noted and thus, we adjusted for these differences in discipline, gender and years in practice when fitting the linear regression model.

A series of one-way analysis of variance (ANOVA) tests were used to determine whether there were statistically significant differences between the mean scores for the Ethical Response Self Efficacy Survey for each of the three groups. An ANOVA was run for each individual question as well as the total mean score for the survey, including all 10 questions. Secondary to the small numbers and unequal groups a Post-Hoc ANOVA was run to compare the mean scores on the Ethical Response Self-Efficacy survey between the Health Care Ethics ECHO groups combined and the control group. Due to missing data, an ANOVA was run for each question, the mean score for questions 1–10 as well as the mean score for questions 1–5. The relationship between method of training and participant characteristics to scores on the Ethical Response Self Efficacy Survey were determined by a 95% confidence interval. Level of significance was established at  $p < 0.05$ . All operations were carried out using IBM SPSS Statistics Software Version 25.

## Results

There were 172 participants in the study. Of those, 119 belonged to the control group (Group 1); 38 participants belonged to Group 2, Traditional ECHO; and Group 3 consisted of 15 sensemaking ECHO participants. Of 172 participants 139 completed the demographic questions for sex, provider type, and length of time in practice. Twenty out of 139 (14%) identified as male and 119 (86%) identified as female. The primary provider types included 115 nurses (83%), 10 physicians (7%), and 14 who were classified as other (10%). Participants in the other category represented ethics consultants, compliance and quality officers, a genetic counselor, social workers, a



dental hygienist, a risk management officer, and ombudsmen. The participants response regarding years in practice ranged from 1 to 50 years: 35% had 1–5 years of experience, 19% had 6–10 years of experience, 16% had 11–15 and 30% had more than 15 years.

Descriptive statistics for mean scores on the first five questions of the Ethical Response Self-Efficacy survey indicate that the Sensemaking ECHO participants demonstrated the highest mean scores of any group on the ethical response self-efficacy survey. The sensemaking group had a mean score of 25.86 on the first five questions, compared to 23.83 for the control group and 23.03 for the Traditional ECHO group. However, these differences were not statistically significant as shown in Table 2.

Relationship between training group and score on the ethical response self-efficacy survey was computed using a series of one-way ANOVAs. The series of ANOVAs was run for the three groups, control, Traditional ECHO, and Sensemaking ECHO for each individual question as well as an overall mean score. Summary statistics for the first five questions on the Ethical Response Self-Efficacy Survey are outlined in Table 3.

The Sensemaking ECHO group scored significantly higher than the Traditional ECHO group on the first question of the ethical response self-efficacy survey ( $p = 0.035$ , mean difference = 0.888, 95% CI = (0.05, 1.17)). The Sensemaking ECHO participants scored higher (mean = 5.47) on the first question of the ethical response self-efficacy survey than both the Traditional ECHO group (mean = 4.58) and the control (mean = 5.08); however, the difference between the sensemaking and control group was not statistically significant ( $p = 0.437$ , mean difference = 0.391, 95% CI = (-0.36, 1.14)).

Bivariate relationships between ethical response self-efficacy (SE) score and participant characteristics were examined using an independent samples t-test. Relationships were assessed for each individual question as well as total mean score for the ethical response self-efficacy survey. We found no statistically significant relationships between self-efficacy score and participant characteristics. When fitting a predictive model to forecast ethical response self-efficacy score from training method when adjusting for participant characteristics, the only statistically significant participant characteristic affecting self-efficacy score was years in practice, and only for Question 1. The relationship between years in practice, group, and self-efficacy score was statistically significant ( $p = .02$ ,  $b = 0.02$ , 95% CI = (0.003, 0.03)). That is, for every 50 years of practice, there would be an increase of 1 point on the ethical response self-efficacy score for question one (table not included), thus this relationship is not clinically meaningful.

## Discussion

This study examined including sensemaking theory into didactic training and case for Health Care Ethics ECHO. The Sensemaking ECHO group that was introduced to the STICC framework perceived that they were better able to recognize and address ethical conflict arising in the clinical setting, when compared to the Traditional ECHO participants who were not introduced to sensemaking theory and strategies. While both ECHO groups received a didactic presentation on ethics theory and application to practice, reviewed cases, and discussed real-life ethics consults, the participants who were trained



**Table 2** Descriptive statistics for predictor variables ( $N = 172$ )

Question	Variable	N	Mean Score (SD)	Range
Recognize and effectively address ethical conflict when it occurs	Control	119	5.08 (1.121)	2–7
	Traditional ECHO	38	4.58 (1.328)	2–7
	Sensemaking ECHO	15	5.47 (.990)	4–7
Question	Variable	N	Mean Score (SD)	Range
Communicate with patients about EOL issues and concerns	Control	119	4.88 (1.457)	1–7
	Traditional ECHO	38	4.82 (1.574)	1–7
	Sensemaking ECHO	15	5.40 (1.502)	2–7
Question	Variable	N	Mean Score (SD)	Range
Participate with patients/families in advance care planning	Control	119	4.41 (1.362)	1–7
	Traditional ECHO	38	4.82 (1.557)	1–7
	Sensemaking ECHO	15	4.93 (1.710)	1–7
Question	Variable	N	Mean Score (SD)	Range
Recognize and address burdens of caregiving for complex patients	Control	119	4.80 (1.338)	1–7
	Traditional ECHO	38	4.63 (1.282)	2–7
	Sensemaking ECHO	15	5.20 (1.612)	2–7
Question	Variable	N	Mean Score (SD)	Range
Respond effectively to patient and families when requests for aid in dying occur	Control	119	4.66 (1.531)	1–7
	Traditional ECHO	38	4.18 (1.658)	1–7
	Sensemaking ECHO	15	4.87 (1.727)	1–7
Question	Variable	N	Mean Score (SD)	Range
Total score	Control	119	23.83 (5.833)	10–35
	Traditional ECHO	38	23.03 (6.232)	9–32
	Sensemaking ECHO	15	25.86 (6.917)	12–35

in application of sensemaking theory to resolve ethical issues in practice demonstrated statistically significantly higher scores in their perceived ability to address ethical conflict. It is also important to note, that even though not statistically significant, participants who were trained in sensemaking produced the highest score on every component of the ethical response self-efficacy survey when compared to the other two groups.

Since a primary learning objective in clinical ethics education is to prepare clinicians to respond ethically in practice, understanding the relationship between type of training and self-efficacy is important. While the results from this preliminary study are mixed, there are implications for both the understanding of ethical decision-making in practice

**Table 3** Summary statistics of SE score and comparison to sensemaking group

Dependent variable	Sensemaking Group	Comparison Groups	Mean	95% CI			
				Lower			
Difference	SE	p					
Upper							
Recognize/address ethical conflict when it occurs		sensemaking	control	.391	.318	.437	-.36
1.14							
traditional	.888	.354	<b>.035*</b>	.05	1.17		
Communicate about EOL	sensemaking	control	.518	.407	.414	-.45	1.48
		traditional	.584	.453	.404	-.49	1.66
Participate with patients/families in ACP	sensemaking	control	.522	.394	.562	-.43	1.47
		traditional	.118	.438	1.00	-.94	1.18
Recognize/address burdens of caregiving	sensemaking	control	-.167	.252	1.00	-.78	.44
		traditional					
Respond to requests for aid in dying	sensemaking	control	.203	.432	1.00	-.84	1.25
		traditional	.682	.481	.473	-.48	1.84
Total Score	sensemaking	control	2.03	1.65	.657	-1.95	6.02
		traditional	2.80	1.84	.271	-1.50	7.18

\*The mean difference is significant at .05 level

as well as opportunities to improve pedagogical approaches to better prepare clinicians to respond ethically in practice. Specifically, use of sensemaking to teach clinical ethics shows promise as a pedagogical approach in improving ethical response of clinicians in practice.

An interesting finding was that the control group, i.e. those individuals who only received the traditional ethics training as part of their professional education, had self-efficacy scores that were higher than those who participated in a Traditional ECHO. While these differences did not rise to the level of statistical significance, it should be noted that the results are inconsistent with the study hypothesis. It was hypothesized that the Traditional ECHO participants would score higher on the ethical response self-efficacy survey than the control participants. However, it is possible that the Health Care Ethics ECHO participants had increased awareness of the complexity of responding ethically to complex cases in practice, and this may explain the lower self-efficacy scores compared to the control group.

As noted by many behavioral ethicists, one of the most prevalent barriers to ethical action relates to inability to recognize the ethical components relevant to the decision-making process (Bazerman 2008; Sezer et al. 2016). This has also been noted in clinical ethics, where a common barrier to resolving ethical conflict stems from a general inability to recognize and frame conflicts at the bedside as ethical in nature (Alice et al. 2011). This indicates that if clinicians are not trained in recognizing ethical conflict, they may overestimate their ability to address and resolve ethical concerns at the bedside. Thus, secondary to the limited ethics training received by control group participants, they may be less likely than the ECHO groups to recognize the ethical nuances of medical decision-

making. This could potentially explain the difference in self-efficacy scores between the control group and Traditional ECHO participants, who arguably have advanced training in recognizing the complexities of ethics issues at the bedside. Thus, it is recommended that a knowledge-based assessment be incorporated into future studies. Since ethical response is predicated on being able to identify the ethically supported course of action, assessment should include determining cognitive awareness of an appropriate response prior to assessing behavioral skills related to one's ability to respond.

Findings from the predictive model to assess the influence of participant characteristics on ethical response, indicate that practice experience alone cannot be relied upon to develop the skill of responding ethically in practice. The predictive model forecasting ethical response self-efficacy score from training method and participant characteristics was statistically significant when accounting for years in practice. However, the result is not practically relevant in that for every 50 years of practice, you would see an increase of 1 on the self-efficacy score. For example, if a female nurse with 1 year of practice experience rated her ability to recognize and effectively address ethical conflict when it occurs as a 5/7 on the self-efficacy scale, all other things being equal a nurse with 51 years of experience would rate herself as 6/7 on the self-efficacy scale, which could be attributed to her years in professional practice even if she had the same ethics training. This supports the need to optimize behavioral learning outcomes produced by clinical ethics training.

## Limitations

Limitations of this study include use of a small convenience sample, particularly in the Sensemaking ECHO, and the uneven number of participants in each group. Expanding the number of study participants as well as the number and type of participants in Health Care Ethics ECHOs will strengthen future studies. While the results showed preliminary promise in use of sensemaking strategies as a pedagogical approach to teach clinical ethics, incorporation of sensemaking into other clinical ethics instructional forums is necessary to determine if its use is effective across teaching platforms. Further exploration to differentiate influence of ECHO and sensemaking on learning outcomes is indicated. With a larger number of subjects and a more even distribution of participants by group, a stronger predictive relationship between variables such as sensemaking or ECHO and ethical response may develop. Since the sensemaking group in this study also potentially benefited from the ECHO model, use of additional statistical methods such as moderation or mediation to assess if ECHO delivery influences the relationship between sensemaking and ethical response is recommended.

Another limitation relates to the use of self-efficacy as a determinant of ethical response. Use of a specified self-efficacy scale is limited by the uncertain psychometric properties. In particular, the survey that was utilized for this study was not validated. In future studies it is recommended to also use a knowledge assessment to discern whether a person's perception regarding ability to respond ethically aligns with actual ability to determine the ethically supported course of action. Optimally, assessing behavior in practice, simulation, or virtual immersion would provide an outcome variable more reflective of actual ability to respond ethically in the face of competing external pressure.

## Conclusion

This study focused on whether intentional incorporation of a sensemaking framework for ethical decision making into a Health Care Ethics ECHO increased the likelihood of an ethical response. Specifically, integration of sensemaking theory and application of the STICC framework to cases included in didactic presentations served as a way to translate ethical decision making into ethical response. The STICC protocol allows for individuals to organize disparate information in meaningful ways that allows for an action-based response (Weick and Sutcliffe 2015). This is especially important in clinical ethics, where there is increased uncertainty, significant flux in demands, and anomalies that fall outside of clinical or social norms.

While normative theory can shape cognitive perceptions regarding right or wrong, sensemaking gives meaning to the decision-making process that occurs during an unexpected event, such as clinical ethics conflicts. In teaching clinical ethics, it is important that learning outcomes include a clinician's ability to respond to ethically complex cases, not just identify ethical norms. Case-based ethics instruction allows for increased understanding of the contextual and individual factors that can influence decision making (Bagdasarov et al. 2013). Discussion of real cases within clinical teams provides an opportunity to gain a better appreciation of how these factors may impede one's ability to carry out an ethically supported course of action. Incorporating the STICC framework into discussions helps to guide team decisions resulting in high reliability regarding choosing the optimal course of action for a specific patient (Leykum and O'Leary 2017). Sensemaking frameworks also assist with the linguistic aspects of making sense (Brown et al. 2015; Sandberg and Tsoukas 2015; Weick et al. 2005). In clinical situations, sensemaking builds ethical skills related to fair and clear communication with other stakeholders (Gagnou-Savatier and Mercier 2015). With the increased access to technologies such as videoconferencing, clinicians now have opportunities to discuss these complex cases within diverse health care teams. Videoconferencing used for open discussion that uses sensemaking tools to ground discussion in terms of actions, can help to cultivate provider skills aimed at resolving unexpected ethical conflicts that arise in clinical practice.

Based on the scores of the ethical response self-efficacy survey the study demonstrated that there is preliminary evidence to support the claim that incorporating sensemaking into clinical ethics instruction increases the clinician's ability to respond ethically in practice when compared to traditional normative ethics training and a traditional ECHO model that does not include introduction to sensemaking theory. While it has been argued that clinical experience may best prepare clinicians for addressing complex ethical conflicts in practice, the outcomes of this study indicate that even when clinicians have practiced for many years, they would benefit from clinical ethics training that includes instruction in sensemaking theory and action-based strategies focused on resolving ethical conflict and maximizing ethical response.

## Compliance with ethical standards

**Conflict of interest** On behalf of all authors, the corresponding author states that there is no conflict of interest.

## Addendum 1

### *Demographics/Attribute Variables*

What is your sex?      M      F      Other

What is your primary provider type?

Physician  
Nurse (Nurse Practitioner/RN/LPN)  
Ethics Consultant  
Other (Please Specify: \_\_\_\_\_)

How long have you been in your professional role? (in years) \_\_\_\_\_

How many times have you participated in an Ethics ECHO? \_\_\_\_\_ (whole number)

### **Specified Measure of Self-Efficacy**

On a scale of 1-7 (described below) please rate your skills, knowledge or competence to address the following topics related to self-efficacy during your participation in Health Ethics ECHO at various points of time

- 1 = none or no skill
- 2 = vague knowledge, skills or competence
- 3 = some knowledge, skills or competence
- 4 = average among my peers
- 5 = competent
- 6 = very competent
- 7 = expert, teach others

1. Recognize and effectively address ethical conflict when it occurs
2. Communicate with patients about end of life issues and concerns
3. Participate with patients and their families in advance care planning
4. Recognize and address burdens of caregiving for complex patients
5. Respond effectively to patients and families when requests for aid in dying occur
6. Address ethical problems related to futility in order to limit clinically inappropriate treatment
7. Accomplish goals related to carrying out an ethically supported course of action
8. Deal with unexpected events that can result in ethical conflict
9. Identify and utilize resources that can assist in handling unforeseen ethical situations
10. Communicate effectively when healthcare team members disagree in order to act ethically in consideration of the patient

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