

EDUCATION FORUM

Perceptions of 24/7 In-house Attending Coverage on Fellow Education and Autonomy in a Pediatric Cardiothoracic Intensive Care Unit

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ABSTRACT

Background. The 24/7 in-house attending coverage is emerging as the standard of care in intensive care units. Implementation costs, workforce feasibility, and patient outcomes resulting from changes in physician staffing are widely debated topics. Understanding the impact of staffing models on the learning environment for medical trainees and faculty is equally warranted, particularly with respect to trainee education and autonomy.

Objective. This study aims to elicit the perceptions of pediatric cardiology fellows and attendings toward 24/7 in-house attending coverage and its effect on fellow education and autonomy.

Methods. We surveyed pediatric cardiology fellows and attendings practicing in the pediatric cardiothoracic intensive care unit (PCTU) of a large, university-affiliated medical center, using structured Likert response items and open-ended questions, prior to and following the transition to 24/7 in-house attending coverage.

Results. All (100%) trainees and faculty completed all surveys. Both prior to and following transition to 24/7 in-house attending coverage, all fellows, and the majority of attendings agreed that the overnight call experience benefited fellow education. At baseline, trainees identified limited circumstances in which on-site attending coverage would be critical. Preimplementation concerns that 24/7 in-house attending coverage would negatively affect the education of fellows were not reflected following actual implementation of the new staffing policy. However, based upon open-ended questions, fellow autonomy was affected by the new paradigm, with fellows and attendings reporting decreased “appropriateness” of autonomy after implementation.

Conclusions. Our prospective study, showing initial concerns about limiting the learning environment in transitioning to 24/7 in-house attending coverage did not result in diminished perceptions of the educational experience for our fellows but revealed an expected decrease in fellow autonomy. The study indirectly facilitated open discussions about methods to preserve fellow education and warranted autonomy in our PCTU; however, continued efforts are needed to achieve the optimal balance between supervised training and the transition to autonomous practice.

Key Words. Fellow Education; 24/7; In-house; Attending Coverage; Graduate Medical Education; Autonomy

Introduction

In intensive care units (ICUs) across the United States, 24/7 in-house attending coverage is emerging as the expected standard of care. This evolution reflects guidelines issued by the Society of Critical Care Medicine and the American

College of Critical Care Medicine. The guidelines suggest that dedicated intensivists should be available in ICUs 24/7 to achieve the highest quality of care and promote public trust.¹

These recommendations have sparked a national debate about the effects of 24/7 in-house attending coverage in ICUs on patient outcomes,

implementation costs, and workforce feasibility.²⁻⁴ Studies evaluating the effect of 24/7 in-house attending coverage on patient outcomes in adult^{5,6} and pediatric^{7,8} ICU populations are limited, variable, and often contradictory. Thus, there continues to be active research to empirically evaluate the impact of coverage policies on patient outcomes. In addition, research on the impact of such well-intentioned policies on the learning and practice environment for medical trainees is also necessary. Literature on the potential impact of 24/7 attending presence on fellow trainee education and autonomy is also limited. In a survey distributed to fellows and program directors of adult critical care training programs in academic medical centers in the United States, a majority of respondents reported that 24/7 attending coverage would improve fellow education; however, a majority of respondents also indicated that fellow autonomy would be negatively impacted.⁹ Similarly, another study revealed that pediatric intensivists, critical care fellows, and residents expressed concern regarding preparedness for independent practice for trainees in centers utilizing 24/7 in-hospital intensivist coverage versus an intensivist home-call model.¹⁰

The aim of our study was to evaluate the perceptions and experiences of pediatric cardiology fellows and faculty before and after implementation of a 24/7 in-hospital intensivist coverage model in a subspecialty ICU within an academic medical center.

Methods

We conducted a prospective survey-based study of the perceptions of pediatric cardiology fellows and cardiac intensivists related to the learning and care environment in the pediatric cardiothoracic intensive care unit (PCTU) of a large, university-affiliated medical center. We developed a one-page survey for the fellows and cardiac intensivists consisting of structured Likert item questions as well as open-ended questions (Appendixes 1–2). The surveys used were ad hoc convenience instruments that were not validated. The PCTU experience for our fellows is limited to their second year of subspecialty training.

We distributed a baseline survey to our pediatric cardiology fellows ($n = 11$) who had recently rotated in our PCTU prior to the initiation of 24/7 attending coverage (which started on July 1, 2012). Following the transition to 24/7 in-house attending coverage, the survey was given to the

then current pediatric cardiology fellows in the PCTU ($n = 6$).

Baseline data were obtained for attending pediatric cardiac intensivists ($n = 12$) using a one-page survey administered in June 2012 prior to the 24/7 coverage transition. The cardiac intensivists ($n = 12$) completed the survey again in June 2013 (after 24/7 coverage implementation). All responses remained anonymous.

Answers from fellows and attending intensivists were tabulated separately and categorized into “preintervention” (prior to 24/7 attending coverage) and “postintervention” (after initiation of 24/7 attending coverage). The distribution of answers for questions between pre- and postintervention was compared using Fisher’s exact test. We compared cardiac intensivists’ answers preintervention and postintervention using Wilcoxon signed-rank test. Responses to open-ended questions were also compared between the pre- and postintervention surveys from both fellows and attendings.

The study was reviewed and approved by our Institutional Review Board and given the status of “Not Regulated.”

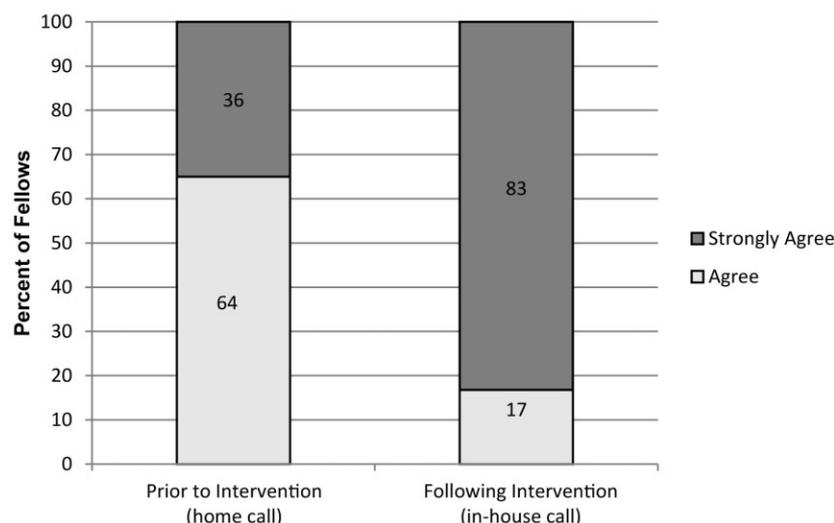
Results

All (100%) of trainees and faculty completed all surveys. Both prior to and following transition to 24/7 in-house attending coverage, 100% of the fellows either agreed or strongly agreed that they felt well supported on-call (Figure 1). Both prior to and after the intervention, 100% of the fellows either agreed or strongly agreed that their overnight call experience was beneficial to their education (Figure 1).

Prior to implementing the 24/7 coverage policy, fellows identified only two scenarios—codes and simultaneous multiple unstable patients—warranting the presence of in-house cardiac intensivists. The majority of cardiac intensivists either agreed or strongly agreed that the overnight call experience was beneficial to the education of the fellows both prior to the intervention (92%) and after the intervention (83%) (Figure 2).

There was no statistically significant change ($P = .5$) comparing survey questions pre- to postintervention among fellows or cardiac intensivists. There were, however, some interesting findings. For instance, only four (36%) fellows strongly agreed that they were well supported by the on-call attending preintervention, whereas in postintervention, most fellows strongly agreed

I was well supported by the on-call PCTU attending.



The PCTU overnight call experience was beneficial to my education as a pediatric cardiology fellow.

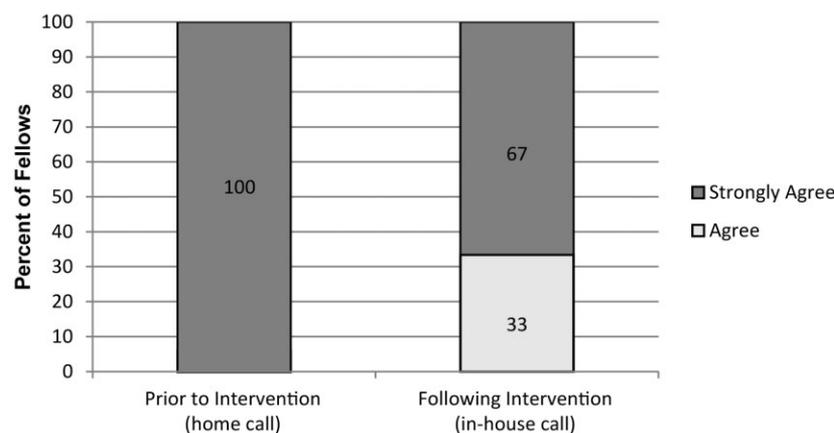


Figure 1. Fellow responses.

(83%). In addition, all fellows strongly agreed that the on-call experience benefited their education preintervention, whereas only 67% of fellows strongly agreed postintervention. Half of the cardiac intensivists felt that 24/7 in-house attending coverage would somewhat negatively affect the training and education of the fellows prior to the intervention versus 17% after the intervention.

In addition, the open-ended responses to the question “Describe the extent of autonomy (i.e., your ability to make and act on your judgments) that you were given when you were taking overnight call—was this extent of autonomy appropriate?”, were analyzed by two independent reviewers. Most fellows (10 of 11) perceived fellow

autonomy to be “appropriate” preintervention, whereas responses were more varied postintervention with only two of six fellows reporting that autonomy was “appropriate.” For example, preintervention, one fellow commented: “I believe that the freedom and space given by the attendings to decide management of patients in the middle of the night was invaluable to my training.” Attending responses to the same question showed a similar pattern.

Discussion

The 100% participation rate speaks to the interest and importance of the educational experience in

The current supervision system for overnight call is beneficial to the education of the fellows.

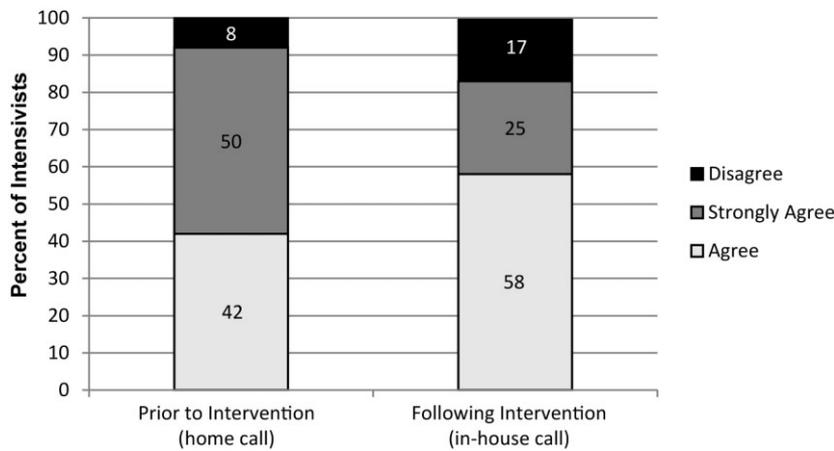


Figure 2. Cardiac intensivist responses.

our PCTU. Despite concerns on the part of both the fellows and faculty, implementation of 24/7 in-house attending coverage did not result in diminishing the overall perception of the value of the educational experience for our fellows. However, even with proactive attempts to preserve autonomy, the appropriateness and value of provided autonomy was affected by 24/7 in-house attending coverage. Thus, the balance between supervised training/education and fellow autonomy continues to be an issue with this type of educational paradigm change and may affect the readiness of independent practice for our trainees.

One indirect benefit that this study provided was to promote open discussions regarding preserving the educational experience as well as autonomy for the fellows prior to the actual initiation of the new staffing model. Eliciting trainee reflections about the specific scope of practice for which they would most value faculty involvement informed both our trainee and faculty expectations as our institution prepared for this transition.

A limitation of our study is that we report only a single center's experience in an academic PCTU. Additionally, although all of our surveys were anonymous given the small number of subjects, there is the potential for both researcher bias and social desirability bias. For instance, as this was a mandated staffing change, trainees may have believed this was a positive intervention and responded positively. Further studies are ongoing at our center to look at the impact of 24/7 in-house

attending coverage on patient outcomes, physician quality of life, and cost-effectiveness.

Author Contributions

Concept/design: S. Owens, G. Owens, Charpie, Mullan. Data analysis/interpretation: S. Owens, G. Owens, Rajput, Charpie, Mullan. Drafting article: S. Owens. Critical revision of article: S. Owens, G. Owens, Rajput, Charpie, Mullan. Approval of article: S. Owens, G. Owens, Rajput, Charpie, Kidwell, Mullan. Statistics: Kidwell.

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Appendix 1: Survey for 2nd Year Pediatric Cardiology Fellows

The purpose of this survey is to evaluate the learning environment that was provided during your training. Please complete this survey based on your experience in the Pediatric Cardiothoracic Unit (PCTU). Your responses will remain confidential, but will be very valuable to the evaluation and continuing design of the pediatric cardiology fellowship program. Thank you in advance for participating.

In the PCTU . . .	Strongly Disagree	Disagree	Agree	Strongly Agree
I was well supported by the on-call PCTU attending.	1	2	3	4
The PCTU overnight call experience was beneficial to my education as a Pediatric Cardiology fellow.	1	2	3	4
At this point in my training, I feel comfortable managing nearly all of the patients in the PCTU.	1	2	3	4

Describe the extent of autonomy (i.e., your ability to make and act on your judgments) that you were given when you were taking overnight call. Was this extent of autonomy appropriate?

How will having an in-house PCTU attending overnight impact the Pediatric Cardiology fellows' experience?

Other Comments?

Appendix 2: Survey for Cardiac Intensivists

The purpose of this survey is to evaluate the learning and working environment in the Pediatric Cardiothoracic Unit (PCTU). Your responses will remain confidential, but will be very valuable to the evaluation and continuing design of the pediatric cardiology fellowship program. Thank you in advance for participating.

	Strongly Disagree	Disagree	Agree	Strongly Agree
The current supervision system for overnight call (attendings taking home call) in the PCTU is beneficial to the education of our Pediatric Cardiology fellows.	1	2	3	4
Providing 24/7 attending physician in-house coverage in the PCTU will improve patient care.	1	2	3	4
Providing 24/7 attending physician in-house coverage in the PCTU will improve the efficiency of moving patients through the ICU.	1	2	3	4

Describe the extent of autonomy (i.e., the ability to make and act on one’s decisions) that the fellows are currently given when taking overnight call in the PCTU. Is this extent of autonomy appropriate?

How will having an in-house PCTU attending overnight affect how **you** teach Pediatric Cardiology fellows?

	Very Negatively	Somewhat Negatively	Neutral	Somewhat Positively	Very Positively
24/7 in-house attending coverage will affect the training and education of Pediatric Cardiology Fellows in the PCTU.	1	2	3	4	5
Requiring faculty to stay in the PCTU to take in-house overnight call will affect my personal/family life.	1	2	3	4	5
Requiring faculty to stay in the PCTU to take in-house overnight call would have influenced my decision to become a cardiac intensivist.	1	2	3	4	5

Other Comments?

Demographic data (Please circle one for each category):

Age in years:	<35	35 to 45	46 to 55	>55
Years as a PCTU attending:	<5	5 to 10	11 to 15	>16