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Team leadership training for medical residents: results of a pilot study

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Thesis

TEAM LEADERSHIP TRAINING FOR MEDICAL RESIDENTS: RESULTS OF A

PILOT STUDY

By

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TEAM LEADERSHIP TRAINING FOR MEDICAL RESIDENTS: RESULTS OF A PILOT STUDY

KELSEY JONES

ABSTRACT

Background: Leadership in medicine is a pertinent topic in the modern healthcare system, yet many hospitals and post-graduate programs provide little to no leadership development for resident physicians. Good clinical leadership provides improved patient outcomes and a better work environment for medical staff.

Objective: The purpose of this study was to pilot a leadership training program for residents and assess it efficacy amongst three different resident groups.

Methods: The pilot curriculum contained three main elements: 360 feedback utilizing the LOFT instrument created by Dr. Eva Aagaard, four 30-minute didactic sessions, and a personal-assessment. In preparation for the curriculum, all residents were required to take an MBTI assessment and subsequent debrief. Residents were randomized into one of four groups to receive either 360 Feedback, didactic sessions, both, or none. The LOFT instrument was designed to assess leadership skills in the clinical setting. Residents selected a minimum of two and maximum of five reviewers to fill out the evaluation before and after their rotation block.

Feedback was provided by a professional consulting firm and didactic sessions were lead by University of Colorado faculty. Group size for both feedback and didactic sessions ranged from 1-6 residents. The primary outcome measured was change in LOFT score before and after rotation blocks. Secondary outcomes included change in leadership tactics assessed by the personal survey, and qualitative assessment of residents' evaluations of feedback and didactic sessions.

Cross sectional comparisons of baseline characteristics between randomization groups were made with ANOVA or chi-square. Mixed effects modeling, statistical methodology accounting for clustering by reviewer within resident groups was utilized for evaluating differences in change in evaluation score between treatment groups.

Results: 40 residents agreed to participate by filling out an informed consent document, and 29 completed the pilot program in its entirety. We saw an improvement in total LOFT score as well as an improvement in each domain over the course of the intervention (Total: 4.86, $p<0.001$, Coaching: 1.62, $p=0.002$, Project Management: 1.81, $p<0.001$, Self Control: 1.41, $p<0.001$). However, we saw no significant change in these scores amongst randomization group. In regards to the Self-Control domain, we saw improvement in the lowest scoring group (Q1) for those that received 360 LOFT Feedback. There was no change in the self-assessments before and after rotation block. Overall, the residents rated the curriculum favorably and found it pertinent to their clinical work.

Conclusion: 360 Feedback on the LOFT assessment was proven to be an effective means of intervention for the lowest scoring participants. While participants found them helpful, the didactic sessions did not show any significant effect on leadership behavior. This study demonstrated overall potential for 360 Feedback using the LOFT assessment as an intervention for leadership improvement in the clinical setting.

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COMIRB- Colorado Multiple Institutional Review Board

LOFT- Leadership Observation and Feedback Tool

INTRODUCTION

While attending medical school, students learn how to diagnose, treat, and prevent disease. What is left out of the curriculum is how to effectively lead a team of healthcare professionals, which they will inevitably do. This may seem trivial compared to the multitude of topics essential to becoming a good doctor. However, physicians like John Waldhausen argue, "Leadership in medicine has never been more important than it is today" (Waldhausen, 2001). To understand why leadership in medicine is so critical in today's healthcare system, it is imperative to look back at what medicine used to be and how it has transformed. Before World War II, solo practitioners or small groups comprised the overwhelming majority of medical practice. By the 1950's, health insurance programs and technological advances shifted medical practice into a system often called the "medical industrial complex"(Relman 1980). This complex is commonly known as the corporatization of medicine and has a greater focus on managed care and less focus on the autonomy of physicians. The explosion of medical technology has led to new professions within the medical community, including laboratory technicians, x-ray technicians, diversified roles for nursing, and physical therapists, to name but a few. With the introduction of Medicare and Medicaid in the 1960's, the proliferation of both healthcare providers and the numbers of people with access to healthcare changed the landscape of medical

practice into a collaborative and team-based environment (Waldhausen 2001, Randolph 2001).

In order for a team to work efficiently, there must be a leader present to define, align, and inspire the mission and goals of everyone involved (Waldhausen 2001). However, most medical schools and post-graduate programs do not offer adequate (or any) leadership training that emphasizes the importance of assuming a leadership role while attending to the day-to-day challenges that clinicians face. This gap in education leaves physicians to more or less stumble into their role as leaders (Bluementhal 2012, Nakai 2006). A study conducted at Baylor University found that only a little over half of surgical residents self- described having average competence (at best) of leadership traits such as, challenging the status quo, inspiring others, helping others, and optimizing performance (Scott 1997). In an interview with ten academic internal medicine chairs, emotional intelligence was identified as a critical leadership trait. They described this skill, which encompasses self-awareness, self-management, and leadership management, as being fundamental to success in their current positions. However, they stated that most chairs are chosen for their clinical and traditional academic abilities, which have little to do with their current roles (Lobas 2006). This disconnect points to the reality that the medical profession still predominately values autonomous decision-making and personal performance above collaboration and teamwork. However, learning how to

coordinate teams is essential for the growth of effective leaders. The mentality

that prizes academic performance, without giving sufficient weight to

interpersonal performance, is arguably, why the majority of medical schools and

postgraduate programs do not focus their efforts on leadership skills (Stoller

2009)

Although there is a gap in the perceived importance of leadership amongst

the medical community, data show that leadership training plays a central role in

the observed quality of care and cost effectiveness of medical practice. In fact,

when nurses report a positive, collaborative environment with physicians, there is

a lower risk of patient death and fewer ICU admissions (Stoller et al). Effective

clinical leadership also provides optimal conditions for discussing quality

improvement and patient safety initiatives by creating an inclusive environment

where team members are willing to engage in these kinds of discussions

(Bluementhal 2012, Mountford 2009). This leadership paradigm falls in line with

the most central ideal of medicine: provide the best possible care for the patient

and do no harm. Proper leadership training reduces the frequency and chance of

harm.

Fortunately, leadership is a teachable skill, which is highly regarded in the

business realm, and much literature is available to support this claim. For

instance, Goldsmith and Morgan give an example from eight multinational

corporations and discovered that leaders involved in development programs improved over time (Goldsmith 2004). As the medical community begins to realize the importance of leadership in medicine, an increasing number of residency programs are implementing some sort of training. However, constructive feedback regarding individual leadership development is almost non-existent (Varkey, 2009). This is why Dr. Eva Aagaard, from the University of Colorado Anschutz Medical Campus, and colleagues, created the LOFT (Leadership Observation and Feedback Tool) assessment (Aagaard). The LOFT tool was specifically designed to evaluate leadership and team management skills among resident physicians. Many large corporations use the Leadership Practice Inventory (LPI) to evaluate their employees. Its questions fall into four categories or domains: Model the Way, Enable Others to Act, Challenge the Process, and Inspire and Encourage the Team. The LPI was implemented to evaluate residents at institutions like UCSF, but initial feedback indicated that the questionnaire was too extensive and not specific enough to the medical profession. Therefore, the LOFT assessment was designed around the domains of the LPI, but with questions that are more specific to the clinical setting in which resident physicians are embedded (Aagaard). Thus, the 29-question evaluation specifically identifies leadership capabilities in the medical profession. We received permission from Dr. Aagaard to utilize the LOFT assessment in our proposed curriculum. In addition to the LOFT assessment, we created five, 30-minute teaching sessions and a self-assessment. We focused on the Internal

Medicine and Ob/Gyn resident populations on the Anschutz Medical Campus as well as the OB/GYN residents from St. Joseph's Hospital. We chose these two resident samples because they represent one largely 'cognitive' specialty (Internal Medicine) and one largely 'procedural' specialty (Ob/Gyn), and they were among the most accessible cohort available for the pilot. In addition, both of these resident cohorts carry significant weight in terms of leadership, since they have constant contact with patients, fellows, nurses, and a wide variety of inter-professional staff. Since they are recent graduates of medical school, and at the entry level of the hospital physician ladder, most residents do not readily view themselves as leaders. However, residents are the first responders to many medical emergencies within the hospital, and therefore represent the "face" of the institution from the patient's perspective. They also lead morning patient rounds, and are responsible for integrating information from medical students, fellows, attending physicians and nursing in formulating a plan of care for each inpatient on service.

Our hypothesis was that the provision of an educational curriculum focused on leadership would result in positive change in leadership behaviors, using the LOFT tool as a measurement for change. This pilot study examines the effect of giving feedback on the LOFT survey, and implementing the five didactic sessions over a 5-10 week period.

METHODS

       Overview. A needs assessment was administered at the University of Colorado School of Medicine amongst 93 Residency Program Directors. This assessment demonstrated a preference for a Leadership Curriculum for residents in years 2-3, sessions no longer than 1 hour. Once the needs assessment was completed a team of faculty members and MDs from the University of Colorado School of Medicine gathered to discuss the basic motivations behind this project. Deliberation took place from November to February, as the team created a program of learning that was feasible within the large workload and restricted duty hours of resident physicians (80 hours per week). Residents typically have scheduled teaching hours, and the program had to fit within the already fixed schedule. Most sessions were worked into lunch hours and early mornings. This study was submitted to the Colorado Multiple Institutional Review Board (COMIRB) and given exempt status. Written informed consent was obtained from all participants. Consent forms, survey invitations, a demographics questionnaire, and reminders to complete surveys were sent through RedCap, a system designed to house data for clinical trials. Using RedCap allowed us to keep the demographics, and LOFT surveys confidential amongst everyone besides the study team.

The curriculum incorporated three critical elements: an external assessment in a 360 degree fashion using the LOFT assessment tool (Appendix 1), four didactic teaching sessions, and a personal self-assessment survey(Apendix 2) (Yukyl et al 1995). In addition to these three items, all residents were required to complete an online MBTI survey and attend a debrief session on their results with Rita Lee, MD. It was decided in the initial development phases that this would be of great value to the residents and would be administered to all, and not measured as an outcome. Our primary outcome was change in LOFT score over one resident rotation block (5-10 weeks). We used a 2 x 2 randomized design to evaluate each combination of feedback (Yes/No) and didactic (Yes/No). Secondary outcomes included analysis of the personal assessment before and after a rotation block, as well as resident evaluation of the feedback and didactic sessions.

360 Evaluation. Residents were instructed to choose up to five reviewers from a variety of backgrounds, including but not limited to attending physicians, medical assistants, nurses, and fellow residents. The 360 aspect of the evaluation refers to the use of reviewers from all medical backgrounds and levels of education and expertise. Using the LOFT survey, each resident was evaluated twice by his or her selected evaluators, once at the beginning of the rotation block and again at the end. The survey questions were grouped into categories as follows: Coaching Support, Project Management, Self Care, and

Total Score. These categories, or domains, were designed to align closely with the four domains of the LPI assessment: Model the Way, Enable Others to Act, Challenge the Process, and Inspire and Encourage the Team (Kouzes, 2012). The survey was scored on a 3-point scale where the left most option was worth one point, the next option was worth two, the third worth three, and the last option was N/A and worth zero.

Secondary outcomes. In addition to their evaluations by others, the residents evaluated themselves using the "Personal Assessment" survey, consisting of 12 questions that aimed to identify leadership style tendencies (Yukl et al. 1995, Appendix 2). The tendencies included rational persuasion, inspirational appeal, consultation, ingratiation, exchange, personal appeal, coalition, legitimating, and pressure. The residents took the personal survey twice, once at the beginning of the rotation block and once at the end. They were prompted to complete this after filling out the consent form on RedCap and then once after their rotation block. They were also asked to evaluate the didactic sessions, as well as the LOFT feedback sessions. These surveys were administered anonymously through Survey Monkey.

Randomization Procedures and Study Design. The residents were randomized into four different groups, stratified by residency assignment. The 360 reviewers were blinded to randomization. The two interventions being tested

in this study were in-person feedback on the LOFT evaluation completed at the beginning of the resident rotation block, and the didactic sessions. To test the interventions separately, as well as in conjunction with each other, we categorized the randomization groups as follows: didactics only, LOFT feedback only, both didactics and LOFT feedback, and no intervention (control). There were three different rotation blocks since there were three different resident groups. The OB/GYN residents from St. Joseph's Hospital and the first year OB/GYN residents from The University of Colorado Medical Campus were on a block of five weeks. OB/GYN residents, years two through four, from the University of Colorado Medical Campus were on a six-week block, and Internal Medicine residents from the same campus were on a 10 week block. Each resident group had the chance to be randomized to any of the four groups upon signing the consent form online. After this was complete, each resident filled out the names of their reviewers (up to five) and contact information for those reviewers. Those names were then put into a separate project on RedCap, where the survey invitations were sent out and completed surveys were stored. In order for a resident to remain a participant in the project, a minimum of two complete LOFT evaluations were required before the resident's rotation, and a minimum of one evaluation was required at the end. To incentivize the residents to participate, we offered each one with a $10 Starbucks gift card. The total timeframe of the study lasted about four months, the end of February to the end of June.

Interventions.

  1.360 Feedback. The residents randomized to the 'feedback only' and the 'teaching and feedback' groups received comprehensive feedback on the initial LOFT evaluation. Figure 1 is an example of the score sheet that the residents were provided with before the feedback session. Expert consultants from Resnik Partners provided the feedback. This feedback consisted of a two and a half hour session performed in groups of up to 12 individuals. Discussed were the scores in each category, and how to improve these scores with practical steps specific to their specialty.

Each domain and total is created by a sum of feedback from up to 5 reviewers, from 102 reviews total.

	Coaching Support	Project Management	Self Management	Loft Total
Overall Average of all 102 reviews	29.51	27.26	21.74	78.51
Dr. **Houseman**	20	33	22	75

Plotted values depict the averaged score per resident. The blue dot is this resident's score per domain and overall.
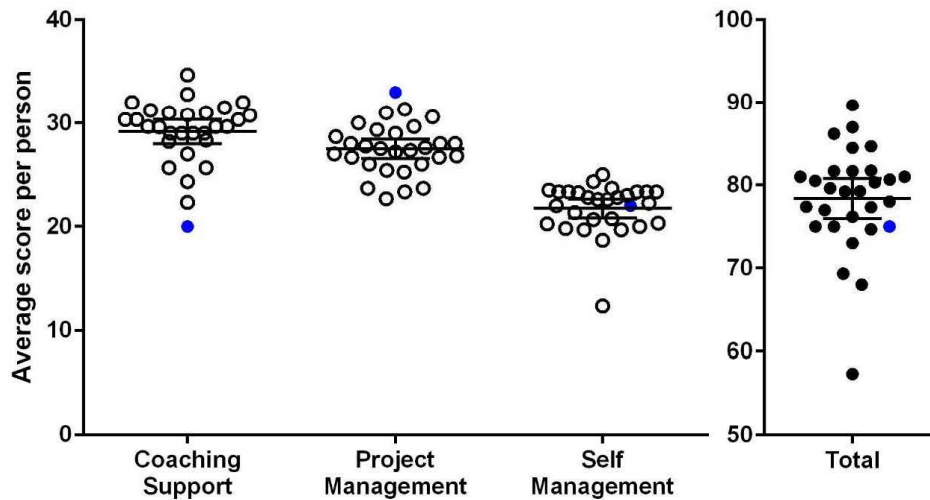
Figure 1: *Sample LOFT Score*. Participant's scores graphed against average scores for each domain and LOFT total. Dr. Houseman is a fictional participant, used to convey what an actual participant would see on his or her score sheet.

2. Didactics. The didactic sessions were designed to help the residents identify specific leadership skills and how to apply them in a clinical setting. The teaching team consisted of experienced faculty members who were content experts: Dr. Kirstin Broadfoot, Dr. Alison Heru, Dr. Nanette Santoro, Dr. Jane Limmer. The lesson topics were as follows: What It Takes To Be a Leader, The Power of Praise and Apology, Inter-professional Relationships, and Conflict

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Management. What It Takes To Be a Leader, was led by Dr. Nanette Santoro (Professor of Ob/Gyn), where she discussed the basic characteristics of leadership. Jane Limmer, MD (Assistant Professor of Ob/Gyn), taught how to give praise to co-workers and how to effectively apologize when in a position of power, with the Power of Praise and Apology. Kirstin Broadfoot, PhD (Assistant Professor, Community and Behavioral Health, Colorado School of Public Health), an expert in mediation, taught about the importance and proper etiquette of Inter-Professional Relationships. Finally, Alison Heru, MD (Professor of Psychiatry and Director of the Liaison Psychiatry service), discussed how to handle conflict in the clinical workplace in the session on Conflict Management.

3. Evaluation of didactic sessions (secondary outcome). After the resident rotation block was completed, the participants were asked to fill out two anonymous surveys evaluating both the teaching sessions and the feedback they received. The surveys were created and completed on Survey Monkey.

4. Self-evaluation of influence behaviors (secondary outcome). Residents were prompted to fill out a self-assessment at the beginning and at the end of the their rotation block. Survey invitations were sent out through RedCap and completed on this database as well.

To confirm randomization, demographic characteristics were compared across the four randomization groups using ANOVA for continuous measures and a chi-square for categorical measures. Baseline overall LOFT score and each domain were compared between randomization groups using a linear mixed-effects model to account for clustering of reviewer feedback by resident. To address the primary aim, paired-change from baseline was compared by randomization group using a linear mixed effects model adjusted for baseline score separately for overall LOFT score and each domain. In a sensitivity analysis, treatment group was re-categorized to reflect an "as treated" approach, where poor attendance at teaching sessions resulted in non-adherence. Resident self-assessments, before and after the intervention took place, were compared using McNemar's test of symmetry, to assess whether there were significant shifts in dichotomized rating. The distribution of feedback received on modules is summarized qualitatively.

A full study was designed to enroll 80 residents in a two-arm design to evaluate training modules and their impact on performance. Enrolling 80 residents (40 per arm) was estimated to yield 80% power to detect a difference between the group proportions of 0.3206, where 20% of residents improve in LOFT score during the study under the null hypothesis and under the alternative

hypothesis, 52.1% or more improve in the group who receives immediate 360 feedback.

A feasibility component was determined to be essential, and thus this pilot project enrolled into four arms to not only assess training modules, and the process of receiving feedback from evaluations, but also to work out the logistical complexities of incorporating feedback and training into a resident's full schedule. Our approach is then to both report on the impact of participating in interactive training modules and receiving feedback, and the feasibility of this arrangement as part of a resident's training.

RESULTS

Ultimately, less than half of the planned 80 resident participants were enrolled, due to either scheduling conflicts or missing data. Thirty- nine residents initially agreed to participate by providing informed consent on RedCap. Of these, 29 provided names and contact info of sufficient fellow medical staff to evaluate them using the LOFT tool (Figure 2). 139 evaluators were provided, and
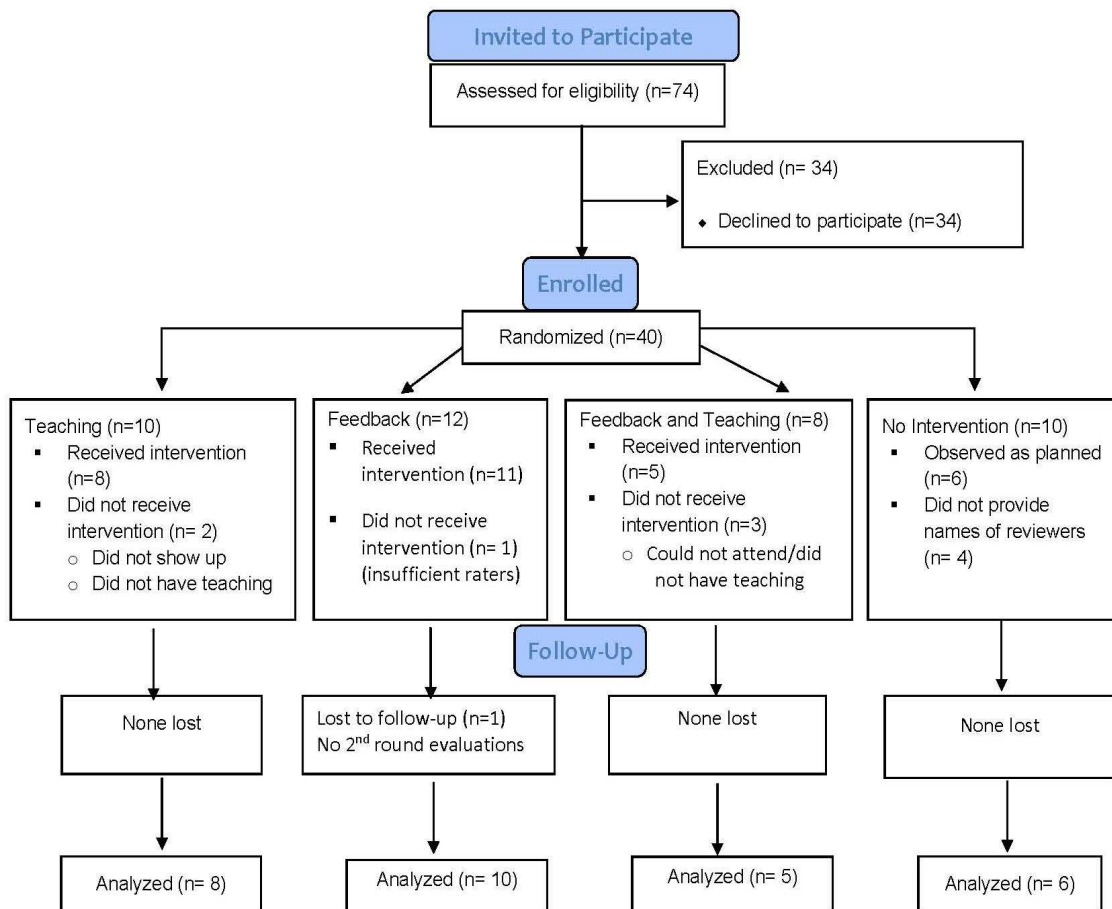

Figure 2: *Flow Chart of Participants.*

103 of them filled out the initial LOFT survey for their specified resident. At the end of the intervention period, 70 of the 103 initial responders filled out the second LOFT evaluation.

Listed in Table 1 below are the demographics collected from the intake survey at the time of consent and the distribution of participants by randomization group. Most participants were MD's, one was DO, one MD/PhD, and one self-classified as "Other Doctoral". Females made up the majority of the cohort (f= 26, m= 13). Despite randomization, sex and marital status were not evenly distributed among the groups.

Table 1. *Demographics of Resident Cohort.*
CU IM= University of Colorado Internal Medicine Residents.
There were five weeks of Internal Medicine Residents (indicated by w1, w2, etc.). There were five weeks of IM residents because each week was on a different rotation block and therefore at different hospital locations around Denver. This aspect required us to implement intervention by week rather than all at once.
CU OB = University of Colorado OB/GYN Residents
St. Joe 1= St. Joseph's Hospital Residents
'Gave Feedback' indicates that the residents were randomized and also gave fellow residents (that were also participants) feedback.
The p-value signifies whether the demographics were evenly distributed amongst the different groups. The p-value for marital status (p=0.019) and gender (p=0.002) were both below 0.05 and were therefore significantly different amongst intervention group.
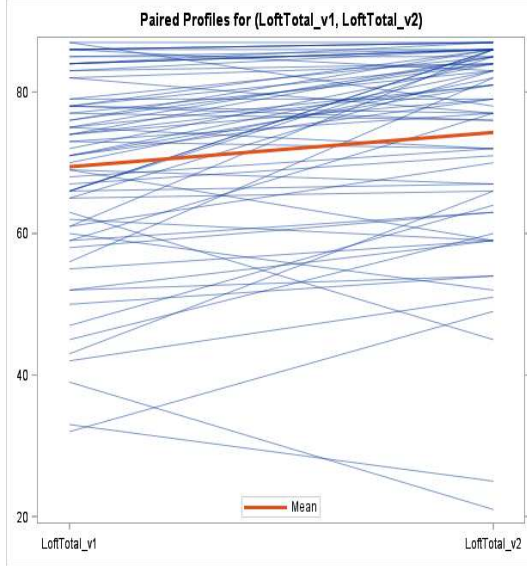
Charact-eristic	Value	Teaching + Feedback	Teaching, No Feedback	No Teaching, + Feedback	No Teaching, No Feedback	p
Group	CU IM - w 1	1(12.5)	0(0.0)	0(0.0)	3(30.0)	0.1
	CU IM - w 3	2(25.0)	3(30.0)	0(0.0)	0(0.0)	
	CU IM - w 4	0(0.0)	3(30.0)	3(25.0)	0(0.0)	
	CU IM - w 5	0(0.0)	0(0.0)	2(16.7)	1(10.0)	
	CU OB 1	2(25.0)	3(30.0)	3(25.0)	2(20.0)	
	St Joe 1	3(37.5)	1(10.0)	4(33.3)	4(40.0)	
age	GeoMean(CI)	30.1(27.4,33.1)	29.8(28.4,31.4)	29.1(27.6,30.7)	27.9(26.9,28.7)	0.172
gender	female	8(100.0)	2(20.0)	8(72.7)	8(80.0)	0.002
	male	0(0.0)	8(80.0)	3(27.3)	2(20.0)	
Hispanic	no	8(100.0)	10(100.0)	9(90.0)	10(100.0)	0.411
	refuse	0(0.0)	0(0.0)	1(10.0)	0(0.0)	
White	Checked	6(75.0)	8(80.0)	9(75.0)	8(80.0)	0.986
Black	Checked	0(0.0)	0(0.0)	0(0.0)	1(10.0)	0.38
Asian	Checked	3(37.5)	2(20.0)	1(8.3)	1(10.0)	0.341
Other	Checked	0(0.0)	0(0.0)	1(8.3)	0(0.0)	0.495
refuse	Checked	0(0.0)	0(0.0)	1(8.3)	0(0.0)	0.495
marital status	couple	0(0.0)	0(0.0)	2(18.2)	2(20.0)	0.019
	Married	4(50.0)	8(80.0)	5(45.5)	0(0.0)	
	Never married	4(50.0)	2(20.0)	4(36.4)	8(80.0)	
MD	Checked	8(100.0)	9(90.0)	10(83.3)	10(100.0)	0.391
DO	Checked	0(0.0)	1(10.0)	1(8.3)	0(0.0)	0.625
PhD	Checked	0(0.0)	0(0.0)	1(8.3)	0(0.0)	0.495
Other doctoral	Checked	0(0.0)	1(10.0)	0(0.0)	0(0.0)	0.38
Fellowship?	Yes	5(62.5)	6(60.0)	5(45.5)	3(30.0)	0.463
Other Leadership	Yes	1(12.5)	4(40.0)	3(27.3)	3(30.0)	0.641
Total Loft	Mean(SD)	74.7(6.9)	68.5(9.2)	71.1(7.1)	61.0(16.1)	0.208
Coaching	Mean(SD)	28.2(3.0)	25.3(3.6)	27.1(2.6)	23.2(6.8)	0.219
Project Mgmt	Mean(SD)	25.3(2.6)	22.5(4.3)	23.2(3.7)	20.5(5.4)	0.4

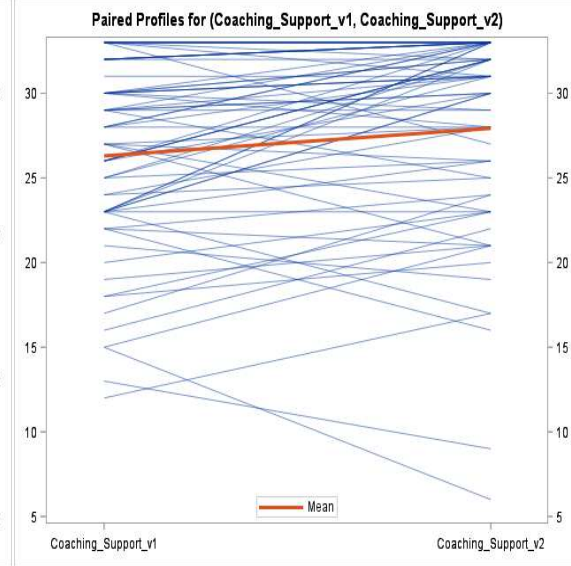| Self Control	Mean(SD)	21.3(1.7)	20.7(2.0)	20.9(2.1)	17.2(4.3)	0.089
Gave Feedback	Yes	2(40.0)	3(33.3)	5(45.5)	0(0.0)	0.535

Change in LOFT Score

1. Overall changes (regardless of randomization). Figure 3 shows the difference in LOFT score of the 70 reviewers who completed *both* the initial and final survey, without taking into account multiple reviewers per resident and treatment group. The top left graph depicts the difference in the total LOFT scores over the resident rotation block under study. The rest of the graphs display the difference in scores of each domain within the survey: Coaching Support, Project Management, and Self-Control. A general upward trend can be seen across each domain as well as with the LOFT total score. The change in the total LOFT score and the domain scores were significant (all p-values below 0.05), with the total score increasing approximately 5 points. It can also been seen that there are a few instances where the scores decreased from time 1 (V1) to time 2 (V2).

Total	Coaching
4.8571 (95%CI: 2.7379, 6.9764), p<0.001	1.6286 (95%CI: 0.6912, 2.5659), p = 0.0009

Paired Profiles for (LoftTotal_v1, LoftTotal_v2)

Paired Profiles for (Coaching_Support_v1, Coaching_Support_v2)

Project Management	Self Control
1.8143 (95%CI 0.8465, 2.7820) p=0.004	1.4143 (95%CI: 0.7200, 2.1086), p=0.0001
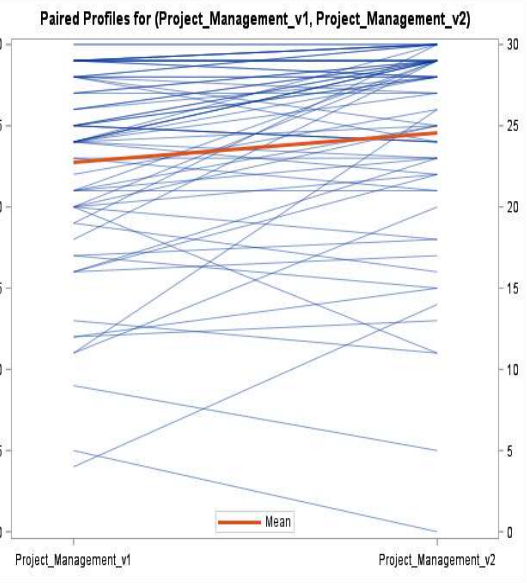
Paired Profiles for (Project_Management_v1, Project_Management_v2)

Paired Profiles for (Self_Control_v1, Self_Control_v2)

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Figure 3: *Change in LOFT Score Over Time.* Each graph represents change in LOFT score at the beginning and end of a rotation block (V1 and V2). The top left graph looks at the total score, where as the rest look at score in each domain. None of the graphs take randomization gro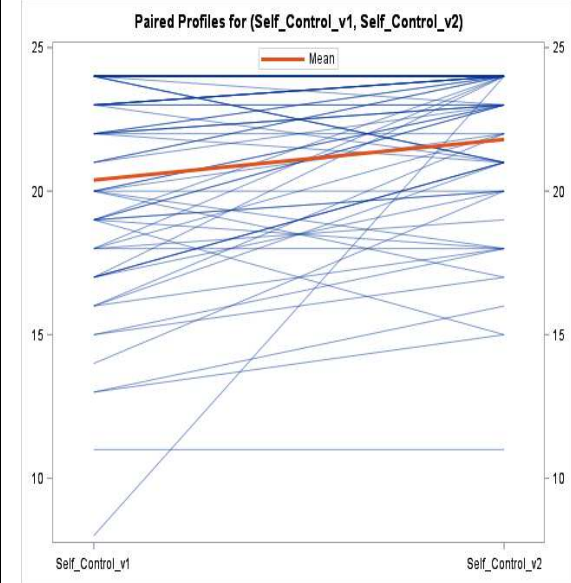up into account. For total LOFT score, the average change was 4.8571 points. The Coaching domain saw an average change of 1.62886, and the Project Management and Self-Control Domains saw a change of 1.8143 and 1.4143 respectively. All p-values were below 0.05 (Loft total: $p<0.001$, Coaching: $p=0.0009$, Project Management: $p=0.004$, Self-Control: $p=0.0001$) with a 95% confidence interval.

Ten of the participants in the study were also peer raters for another resident and therefore provided feedback while also receiving it. Three residents gave feedback and did not receive it themselves. Seven residents gave feedback, while also receiving it. There was not a significant difference in a participants' score when they gave feedback, whether or not they received it themselves.
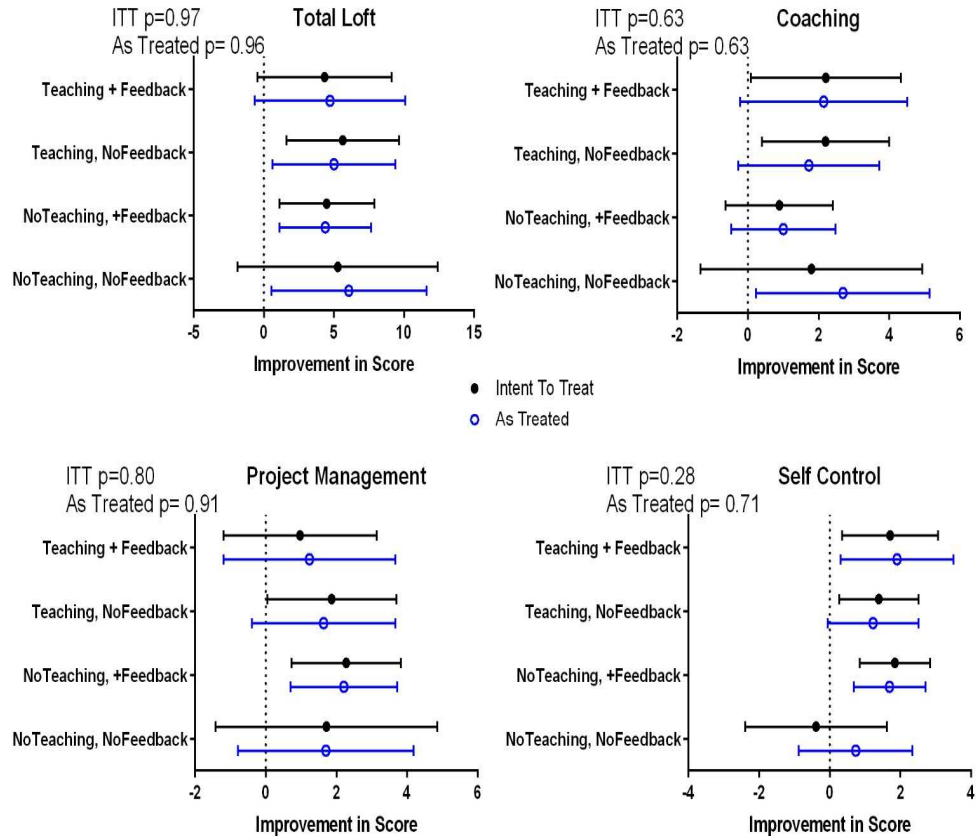
Figure 4:*Change in LOFT Score by Randomization Group.* Each graph represents difference from baseline in LOFT total or domain score. This time each graph accounts for randomization group as indicated by the labels on the Y-axis. All of the p-values are above 0.05 and therefore not statistically significant.

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Figure 4 displays the difference in LOFT total score and domain score, this time accounting for repeated observations as well as treatment group. There is a shift from zero (indicating a statistically significant improvement in score) across all randomization groups, including the control group, in regards to each domain and total score, except for the control group in the 'Self-Control' domain. However, none of these shifts are significant by randomization group, either using an intent-to-treat or an 'as treated' analysis.

3. Sub-analysis using two group assignments. The Feedback and Teaching interventions were also examined as two binary variables rather than their interaction (Fig. 5). The Self-Control domain indicates marginal improvement in score when the participants received feedback, but the change was not significant overall. This was observed in both in the 'intent to treat' and 'as treated' data sets, with p-values of 0.15 and 0.22 respectively. No other significant change was observed amongst the other domains or total LOFT scores.
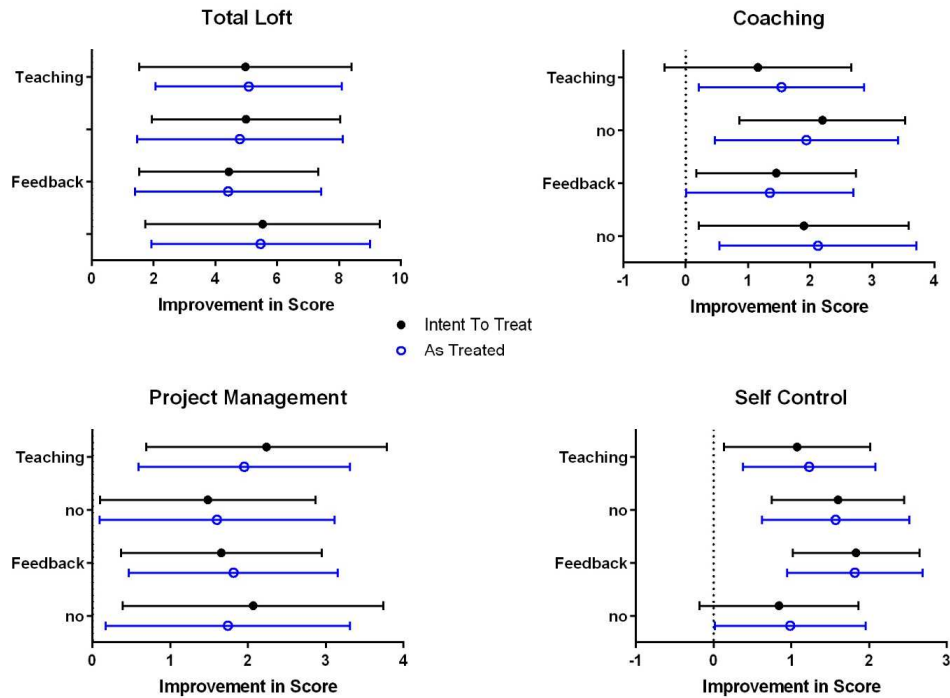
Figure 5: *Change in LOFT score with Two Binary Variables.* Difference from Baseline With Two Binary Variables: Didactic Sessions and Feedback. There is no significant change amongst the two variables in terms of LOFT score improvement.

4. Sub-analysis examining change in lowest quartile of LOFT performance. It was of interest to look at the lowest scoring quartile (Q1), to assess whether treatment vs. no treatment differed in effectiveness for those in this category. Calculating the average score per person, and then taking the lowest quartile from the total score, as well as by domain determined Q1. Comparisons were limited to the lowest groups only: Q1 for feedback, no

feedback, teaching, and no teaching. The self-control domain improved when

participants in the Q1 category received feedback, compared to the Q1

participants receiving no feedback. This difference was statistically significant

with a p-value of 0.01 (Figure 6).

Table 2: *Values for Q1 as an Estimated Point.* Q1 as an estimated
point. Minimum, maximum, and median provided for context.

Variable	Q1	Minimum	Maximum	Median	N
LoftTotal_v1	63.25	42.67	84.50	70.67	29
Coaching_Support_v1	23.67	15.67	32.00	26.75	29
Project_Management_v1	20.75	14.67	29.00	23.25	29
Self_Control_v1	19.25	12.33	23.50	20.55	29

Self Control
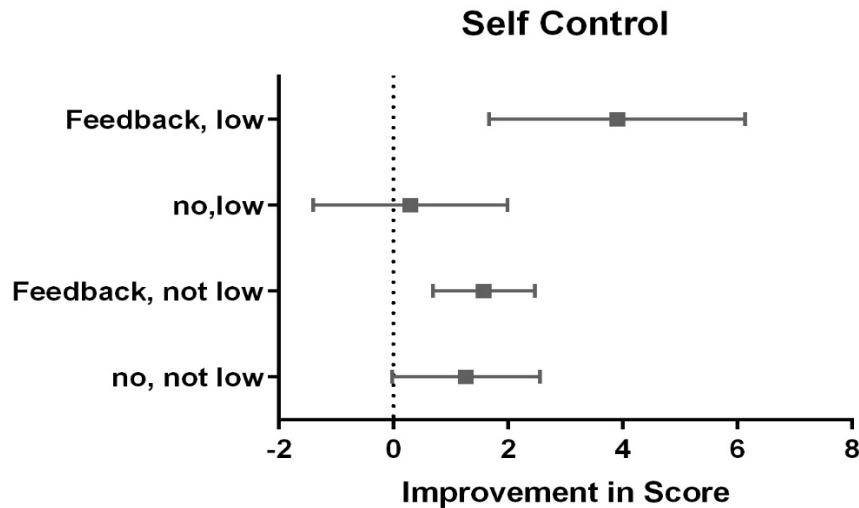
Figure 6: *Improvement in Lowest Scores*. The improvement in score of Q1 feedback vs. no feedback for the 'as treated' data.

5. Sensitivity Analysis We looked at the 33 reviewers who declined to fill out the second round of the LOFT survey. The mean score of the first LOFT survey was almost identical between the group of reviewers that filled out the second survey (70.6) and the group of reviewers that declined (70.8).

All participants completed a self-evaluation, regardless of intervention group, at the beginning and end of the intervention period (Appendix 2). The chi-square analysis looked for asymmetry, or shift, between the responses given before (V1) and after (V2) intervention took place (Table 3). For the first seven leadership techniques, it was desired to see more utilization, or a shift to the

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right. The last two techniques are seen as inappropriate forms of leadership and so less utilization, or a shift to the left was desired. There was no significant shift in the answers given at the two time points.

Table 3: *Analysis of Self-Assessment*. Self-Assessment looked at as a dichotomy with chi-square analysis. All p-values are above 0.05, therefore, there was no significant change in use of the leadership techniques listed.

Before (V1)	After (V2)		p-value
	Never /occasionally	**moderately/very often**	
Rational persuasion: The person uses logical arguments and factual evidence to persuade you that a proposal or request is viable and likely to result in the attainment of task			
Never/occasionally	3	3	0.3173
moderately/very often	1	18	.
Inspirational appeal: The person makes a request or proposal that arouses enthusiasm by appealing to your values, ideals, and aspirations or by increasing your confidence that you can do it			
Never/occasionally	8	4	0.7389
moderately/very often	5	8	.
Consultation: The person seeks your participation in planning a strategy, activity, or change for which your support and assistance are desired, or the person is willing to modify a proposal to deal with your concerns and suggestions			
Never/occasionally	2	7	0.0956
moderately/very often	2	14	.
Ingratiation: The person seeks to get you in a good mood or to think favorably of him or her before asking you to do something			

	Moderately/very often / Never	Occasionally/often (highlighted)	
Never/occasionally	12	4	0.738 9
moderately/very often	5	4	.
Exchange: The person offers an exchange of favors, indicates a willingness to reciprocate at a later time, or promises you a share of the benefits if you help accomplish a task			
Never/occasionally	11	4	0.248 2
moderately/very often	8	1	.
Personal appeal: The person appeals to your feelings of loyalty and friendship toward him or her before asking you to do something			
Never/occasionally	16	3	0.317 3
moderately/very often	6	0	.
Coalition: The person seeks the aid of others to persuade you to do something or uses the support of others as a reason for you to agree also			
Never/occasionally	16	5	0.479 5
moderately/very often	3	1	.
	Never/Seldom	**Occasionally/often**	
Legitimating: The person seeks to establish the legitimacy of a request by claiming the authority or right to make it or by verifying that it is consistent with organizational policies, rules, practices or traditions			
Never/Seldom	9	2	0.157 3
Occasionally/often	6	8	.
Pressure: The person uses demands, threats, or persistent reminders to influence you to do what he or she wants			
Never/Seldom	23	1	0.317 3
Occasionally/often	0	1	.

Educational Intervention Evaluation. Five participants responded to the

didactic evaluation survey, and six responded to the evaluation survey on the

feedback sessions. The majority of responders found both interventions relevant

to their work (Figures 7, 8). In regards to the didactic sessions, the participants

appreciated "the clear identification of good properties and tactics used by

leaders"(Response on Survey Monkey). In terms of the feedback sessions,
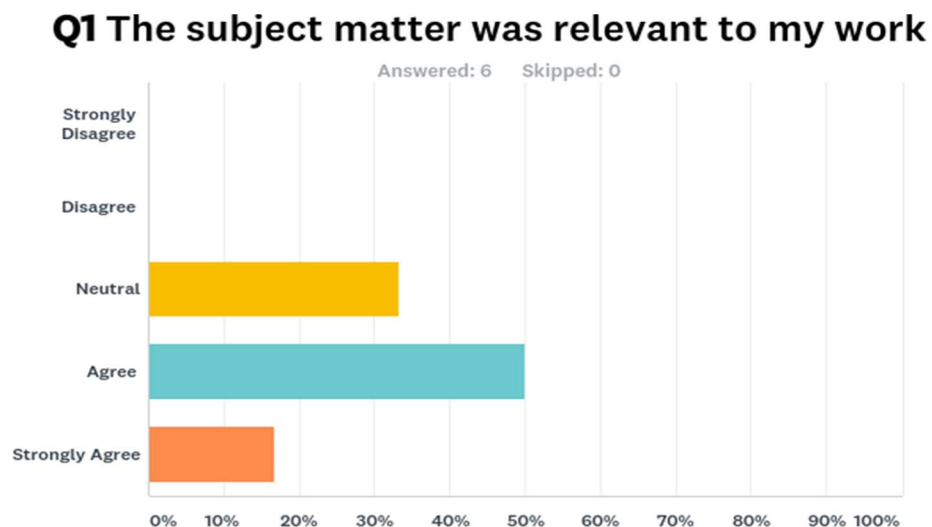
Figure 7: *Question 1 of Feedback Evaluation.* Participant responses
to question 1 from the evaluation of the LOFT feedback sessions.
66% of the participants found the Feedback sessions relevant. A
total of 6 responses were collected.

participants appreciated "getting the specific evaluations to know which questions

brought my average down so that I could focus on those areas of

improvement"(Response on Survey Monkey), as well the opportunity to discuss

and reflect on leadership in the medical field. When asked what could be

improved, the participants stated that it was difficult to fit in to their schedule, and

that the feedback could have been more in depth.

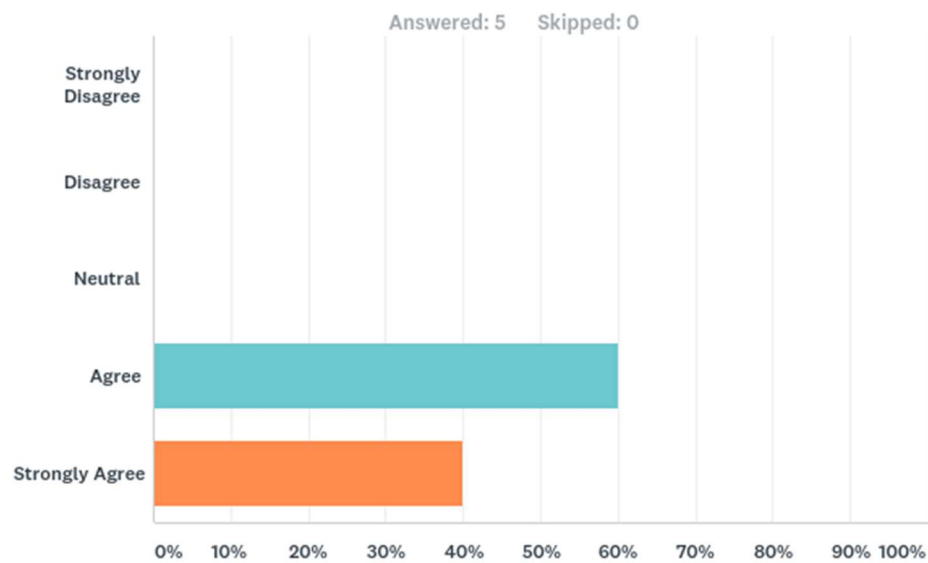## Q2 The topics covered were relevant to my work

Answered: 5   Skipped: 0

Figure 8: *Question 1 from Didactic Sessions Evaluation.* Participant responses to question 1 of the didactic sessions evaluation. 100% of participants found the sessions relevant. A total of 5 responses were collected.

DISCUSSION

Fostering the development of great leaders is something that most successful organizations focus on. So much so, that almost every major Business School in North America has incorporated some form of leadership training into its educational programming (Collins-Nakai 2006, Stoller 2009). Institutions such as the Mayo clinic have gone so far as to change their mission statement in order to provide the framework for a curriculum reform to incorporate more leadership training (Varkey 2009). This however, is the exception and most medical schools and residency programs have yet to take far smaller measures. For this reason, our research team set out to implement a pilot leadership training program for resident physicians on the University of Colorado Medical Campus to explore the value of such training. Overall, we observed that resident's leadership skills, as perceived by others, improved over time regardless of their randomization assignment, and that those in the lowest performing quartile were the only group that demonstrated significant improvement with 360 feedback compared to control. Didactic sessions, while overall well received, did not create a demonstrable difference in LOFT score.

We used the LOFT survey tool to examine change in leadership abilities over time. There was an overall upward trend in the LOFT scores of all residents who had complete data (evaluations both before and after intervention), not

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accounting for randomization group (Figure 3). This signifies that over time, the majority of participants are improving their leadership abilities after only about 5-10 weeks. It also indicates that the LOFT is a sufficiently sensitive tool to detect change over time in a group of about 30 individuals. There are a few possibilities for the improved scores we observed. It could be that we are seeing the effects of rapid acquisition of team management skills by most residents, who are on a steep learning curve. Participants who were randomized to intervention almost always completed the intervention portion in one rotation, in order to allow the same 360 raters to rate them before and after the intervention. It is also probable that at least some of the overall improvement we observed reflected short-term learning about how to work more seamlessly with the fellow medical and inter-professional staff (among from whom the participants selected their 360 raters), leading to higher scores by the end of the rotation. Another possibility is that the resident's knowledge that they were to be evaluated caused them to focus more on their leadership performance, even if they did not have any intervention, also known as the Hawthorne Effect (Adair 1984). A few individuals decreased in score, seen in the total, coaching, and project management domains. One possibility for this finding is that the reviewers were not properly taught how to rate residents. Ideally, the reviewer would look at the sum of the resident's interactions over the 5-10 week period, and that is how they were asked to consider the second evaluation. However, it is possible that a single negative interaction with the resident could have resulted in a lower LOFT score at the end

of the intervention. Amongst the different treatment groups, we did not see significant LOFT score improvement over time as a function of receiving 360, feedback, attending the didactic sessions, or both (Figure 4). Instructions we gave to the raters were brief, written into an email that accompanied the link to the survey, and uniform. They stressed two major potential biases: first, that the rater would only consider the resident at his or her 'best' and therefore rate too highly, a problem previously noted with the LOFT (Aagaard); and second, that the rater might not take into account the entire rotation period but would only focus on the last few days of interaction with the resident they are rating. While it might have been beneficial to spend more time with the reviewers coaching them on how to properly evaluate the residents, this was not feasible in the context of this study and we likely would have decreased participation by the raters by demanding in-person time.

Because our sample size was limited to residents in three programs only, we had some residents who were themselves raters as well as participants. We performed subsequent analyses to account for the possibility that this aspect of the study introduced bias. The concern was that providing feedback to others would change a participant's scores because he or she viewed the questions that were being asked of raters. We found that providing 360 feedback did not have any significant effect on LOFT score among participants. We also looked at the reviewers who declined to fill out the second round of the survey to see if there was a correlation between reviewers who scored participants poorly and the

likelihood that they would rate them again, another possible source of bias. There was no significant correlation, thus we conclude that these potential sources of bias had a minimal effect on the integrity of the analysis.

We performed several post hoc analyses. Feedback and teaching were also examined as two binary variables, once we observed that there did not appear to be any difference in change in LOFT score by the original 4 randomization groups. Again, there was no significant improvement in total score, or across any of the domains related to the use of either 360 feedback or didactics. There was a marginal improvement in regards to self-control with the group that received feedback(Figure 5) .

Finally, we examined change in LOFT score among the residents scoring in the lowest quartile on the initial 360 assessments. Here, we observed significant improvement in the self-control domain amongst the lowest scoring participants who received feedback (Figure 6). Many residents had relatively high scores, as seen in time point 1 (V1) (Figure 3). At the beginning of this project, we had opined that residents with the most competency would get better, and did not expect the intervention to be able to help those who were least competent in team management skills. Therefore, this finding pleasantly surprised us. It is encouraging that feedback was able to shift the self-management scores of low performers after a brief intervention with feedback. The self-control domain

asked questions that dealt with handling emotions and conflict. Self-control (or self-management) is an important component to emotional intelligence (EI), which is described as the extent to which one can manage and process emotions (George 2000). EI is critical to good leadership (George 2000, Varkey 2009). It is possible that traits dealing with self-management and EI are the first to see a shift in regards to becoming a better leader since they are internal changes. This is in line with the first of Wiley W. Souba's (MD) fundamental leadership principles "recognizing that the work of leadership involves an inward journey of self-discovery" (Souba 2004). The fact that we observed an overall trend with 360 feedback among the entire group, coupled with the significant change in the lowest performers suggests that 360 feedback is worth further investigation as a method to improve performance in this domain of leadership capability.

Self-assessment of influence behaviors did not change before and after intervention in any of the groups (Table 3). The self-assessment was used to measure the frequency at which the participants utilized or did not utilize specific leadership techniques. Therefore, there was no self-detected increase in how often participants used the more effective techniques or abandoned the less effective ones. It is a possibility that the short time frame of the study was a factor.

This pilot study has some key strengths that support our findings. Recruiting residents from both Internal Medicine and OB/GYN was beneficial because we were able to observe the intervention across more than one

specialty. In this way, we are able to generalize our findings about residents as a whole rather than within a single specialty niche. The availability of the LOFT tool was a strength, because it was specifically designed to examine clinical leadership skills rather than leadership skills in a more general sense. The use of four randomization groups allowed us to test 360 feedback and didactics separately. Ideally, the pilot was powered to include 80 participants, and a second round of recruitment had been planned, but it is not certain as of this writing whether that will be feasible. Knowing that adding the didactic sessions to LOFT feedback does not yield significantly different results can save valuable resident time moving forward and be a guide to other institutions looking to start programs of their own. We also had relatively little dropout after the start of the intervention. Of the 40 randomized, only 10 participants did not follow through with the intervention as planned, leaving us with a 75% retention rate.

It is worth mentioning that we also ran into many obstacles in implementing this program, and there are several sources of potential bias that should be taken into account. The most significant obstacle was the lack of flexibility in resident schedules for the whole of the intervention. The teaching sessions, which were originally scheduled to be 45 minutes long, had to be cut down to 30 minutes in order to accommodate all five of them over the single resident rotation block. Many residents who declined to participate did so because they felt that they did not have any extra time to devote to the project.

This issue is not unique to our study. Much of a physician's attention is focused predominately on academic areas of training, leaving little time for other training programs, such as a leadership curriculum (Porter 2006). A study by Joyce et al. examining 160 companies across 40 industries found that companies with the most flexible structures performed the best over a 10-year period (Joyce 2003). In his book, *The Ordeal of Change*, Eric Hoffer states "In times of change, learners inherit the Earth, while the learned find themselves beautifully equipped to deal with a world that no longer exists" (Hoffer 1963). Health organizations are finding themselves with a need and a void for strong leadership to provide direction and cohesiveness as pressure mounts to address issues such as cost-efficiency, quality, and access (Nakai 2006, Porter 2006).). Change in any organization is inevitable, and embracing it is one of the hallmarks of a successful organization (Kotter 1990, Kouzes 2002, Bennis 1984) It is likely that little to no time for leadership training will continue until change happens at an organizational level and developing leaders is prioritized.

Finding raters who would work with individual residents for the entirety of the intervention and who knew them well enough in the beginning to fill out the initial survey was another major issue for the participants and led to lower-than-hoped for completion rate. Some residents declined to participate at the outset because they felt that finding five raters who could meet these criteria was not realistic. Some reviewers declined to fill out the second survey because they did

not feel that they interacted with the residents enough to give an accurate evaluation after the resident block was over. These obstacles made implementation of the original design extremely challenging.

In summary, with the implementation of a brief leadership curriculum, we saw an overall increase in LOFT scores in all resident physicians regardless of whether they participated in the curriculum, as well as an increase in self-management scores for the lowest scoring participants and a trend for improved self-management associated with the provision of 360 feedback of initial LOFT scores. This study sheds light on the potential of a brief and efficient leadership intervention, specifically the use of the LOFT feedback took, to help improve team management skills in resident physicians. It was also important to bring to them awareness of their "unofficial" titles and give them the tools to be competent leaders as they progress within the hospital hierarchy. In addition, we report some of the major challenges to implementing this type of training as a caution to future investigators. Residents subjectively rated the program favorably overall, indicating a willingness to learn management skills and an appreciation of their relevance. We believe that this initial phase of leadership training on the University of Colorado Medical Campus is a step in the right direction towards making leadership a priority in the medical community.

APPENDIX 1: 360 LOFT Evaluation

1	N/A	Does not praise the team or team members	Often praises the team or team members	Consistently highlights team successes and praises the team
2	N/A	Does not do things for the team that demonstrate appreciation	Often does things for the team that demonstrate appreciation	Consistently celebrates team successes
3	N/A	Does not micromanage team members	Sometimes micromanages team members	Consistently micromanages team members
4	N/A	Gives team members little room to independently generate and execute plans, even when they're competent to do so	Often gives competent team members room to independently generate and execute plans	Consistently allows competent team members to independently generate and execute plans
5	N/A	Does not provide adequate supervision for team members	Often provides adequate supervision for team members	Consistently provides adequate supervision for team members
6	N/A	Does not take an interest in team members	Often takes an interest in team members	Consistently invests in relationships with team members
7	N/A	Is never available	Is inconsistently available	Is consistently available
8	N/A	Is often dismissive and difficult to approach	Can be dismissive at times but generally easy to approach	Is always easy to approach and never

				dismissive
9	N/A	Does not listen to suggestions or concerns of team members	Often listens to suggestions or concerns of team members	Consistently listens to suggestions and concerns of team members
10	N/A	Does not solicit input from team members	Solicits input from team members inconsistently	Consistently solicits input across members of the team
11	N/A	Does not check in with team members	Inconsistently checks in with team members	Consistently checks in with team members
12	N/A	Makes timely and firm decisions	Can sometimes be indecisive	Consistently struggles with decision making
13	N/A	Does not engage in collaborative decision making	Includes some team members in collaborative decision making	Consistently engages team members across professions in collaborative decision making
14	N/A	Does not help out when the team's workload is high	Often helps out when the team's workload is high	Consistently helps out when the team's workload is high
15	N/A	Does not prioritize tasks for the team	Often prioritizes tasks for the team	Consistently prioritizes tasks for the team
16	N/A	Does not distribute the workload amongst team members	Distributes the workload amongst team members but not always appropriately or fairly	Consistently distributes the workload

				appropriately and fairly amongst team members
17	N/A	Does not provide feedback to team members	Often provides feedback to team members, but not always specific, balanced or timely	Consistently provides specific, balanced and timely feedback to team members
18	N/A	Always appears calm in challenging situations	Sometimes exhibits stress in challenging situations	Consistently exhibits stress in challenging situations
19	N/A	Never avoids challenging situations	Often faces challenging situations	Consistently avoids challenging situations
20	N/A	Has a negative attitude	Attitude is neither negative nor positive	Has a positive attitude
21	N/A	Does not manage conflict effectively	Often manages conflict effectively	Consistently handles conflict effectively
22	N/A	Does not pay attention to individual learning needs of team members	Often takes time to explore the individual learning needs of team members	Consistently explores individual learning needs of team members
23	N/A	Consistently more focused on learning than on completing tasks	Balances team learning with task completion	Consistently more focused on completing tasks than on learning

24	N/A	Does not take responsibility for mistakes	Often takes responsibility for mistakes but does not always show effort towards self-improvement	Consistently takes responsibility for mistakes and models self-improvement
25	N/A	Does not express awareness of strengths and weaknesses	Inconsistently expresses awareness of strengths and weaknesses	Consistently expresses awareness of strengths and weaknesses
26	N/A	Never shows disrespectful behavior towards others	Sometimes disrespectful towards others	Consistently disrespectful towards others
27	N/A	Does not set expectations of team members	Explains expectations to team members but does not verify understanding	Consistently ensures that team members understand expectations
28	N/A	Does not engage in development of shared goals for the team	Inconsistently engages in development of shared goals for the team	Consistently engages in development of shared goals for the team
29	N/A	Does not hold team members accountable for achieving goals and meeting expectations	Inconsistently holds team members accountable for achieving goals and meeting expectations	Consistently holds team members accountable for achieving goals and meeting expectations

APPENDIX 2: Personal-assessment

Tactic	Definition
Rational persuasion	The person uses logical arguments and factual evident to persuade you that a proposal or request is viable and likely to result in the attainment of task objectives
Inspirational appeal	The person makes a request or proposal that arouses enthusiasm by appealing to your values, ideals, and aspirations or by increasing your confidence that you can do it
Consultation	The person seeks your participation in planning a strategy, activity, or change for which your support and assistance are desired, or the person is willing to modify a proposal to deal with your concerns and suggestions
Ingratiation	The person seeks to get you in a good mood or to think favorably of him or her before asking you to do something
Exchange	The person offers an exchange of favors, indicates a willingness to reciprocate at a later time, or promises you a share of the benefits if you help accomplish a task
Personal appeal	The person appeals to your feelings of loyalty and friendship toward him or her before asking your to do something
Coalition	The person seeks the aid of others to persuade you to do something or uses the support of others as a reason for you to agree also
Legitimating	The person seeks to establish the legitimacy of a request by claiming the authority or right to make it or by verifying that it is consistent with organizational policies, rules, practices or traditions
Pressure	The person uses demands, threats, or persistent reminders to influence you to do what he or she wants

REFERENCES

Aagaard, E. "Leadership Observation and Feedback Tool (LOFT): Development and Pilot Testing of a Novel Instrument for Evaluation of Residents' Leadership Skills" (unpublished, currently in review).

Adair, John G. The Hawthorne Effect: A Reconsideration of the Methodological Artifact. *Journal of Applied Psychology* 69, no. 2 (1984): 334–345. http://dx.doi.org/10.1037/0021-9010.69.2.334

Bennis, Warren. "The Four Competencies of Leadership." Training and Development Journal 38, no. 8 (1984): 14–19.

Blumenthal, Daniel, Ken Bernard, Jordan Bohnen, and Richard Bothmer. "Addressing the Leadership Gap in Medicine: Residents' Need for Systematic Development Training." *Academic Medicine* 87, no. 4 (April, 2012): 513–522. doi: 10.1097/ACM.0b013e31824a0c47

Collins-Nakai, Ruth. "Leadership in Medicine." *McGill Journal of Medicine* 9 no. 1 (January, 2006): 68–73.

George, Jennifer M. "Emotions and Leadership: The Role of Emotional Intelligence." *Human Relations* 53, no. 8 (August, 2000): 1027–1055. doi: 10.1177/0018726700538001

Goldsmith, Marshall, and Howard Morgan. "Leadership is a Contact Sport: The 'Follow-up Factor' in Management Development." *Strategy + Business* no. 36 (Fall, 2004). Accessed 10/3/2017 from https://www.strategy-business.com/article/04307?gko=a260c

Hoffer, Eric. *The Ordeal of Change.* Titusville, NJ: Hopewell Publications, 2006

Kotter, John P. "What Leaders Really Do." *Harvard Business Review* (December, 2001.

Kouzes, James M., and Barry Z. Posner. *Leadership Practices Inventory [LPI]: Self.* 4th ed. San Francisco: Pfeiffer, 2013.

Kouzes, James M., and Barry Z. Posner. *The Leadership Challenge*. 3rd ed. San Francisco: Jossey-Bass, 2002

Lobas, Jeffrey G. "Leadership in Academic Medicine: Capabilities and Conditions for Organizational Success." *American Journal of Medicine* 119, no. 7 (July, 2006): 617–621. doi: 10.1016/j.amjmed.2006.04.005

Mountford, James, and Caroline Webb. "When Clinicians Lead" McKinsey Quarterly (February, 2009). Accessed 10/3/2017 from https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/when-clinicians-lead

The Myers & Briggs Foundation. "Take the MBTI® Instrument." Accessed 10/3/2017 from http://www.myersbriggs.org/my-mbti-personality-type/take-the-mbti-instrument/home.htm?bhcp=1

Nohria, Nitin, and William Joyce. "What Really Works." *Harvard Business Review* (July, 2003).

Porter, Michael E., and Elizabeth Olmstead Teisberg. *Redefining Health Care: Creating Value-Based Competition on Results.* Boston: Harvard Business School Press, 2006.

Randolph, Fillmore. "The New Medical-Industrial Complex." In N. Schlager and J. Lauer (Eds.) *Science and Its Times: Understanding the Social Significance of Scientific Discovery* (Vol. 7, pp. 336–338). Detroit: Gale Group, 2000–2001.

Relman, Arnold S. "The New Medical-Industrial Complex." New England Journal of Medicine 303 (1980): 963–970. DOI: 10.1056/NEJM198010233031703

Scott, Heather M., Eric G Tangalos, Robert A. Blomberg, and Claire E. Bender. "Survey of Physician Leadership and Management Education." *Mayo Clinic Proceedings* 72, no. 7 (July, 1997): 659–662.

Souba, Wiley W. "Building Our Future: A Plea for Leadership." *World Journal of Surgery* 28, no. 5 (May, 2004): 445–450. doi: 10.1007/s00268-004-7439-8

Stoller, James K. "Developing Physician-Leaders: A Call to Action." *Journal of General Internal Medicine* 24, no. 7 (July, 2009): 876–878. doi: 10.1007/s11606-009-1007-8

Stoller, James K., Mark Rose, Rita Lee, Colleen Dolgan, and Byron J. Hoogwerf. "Teambuilding and Leadership Training in an Internal Medicine Residency Training Program." *Journal of General Internal Medicine* 19, no. 6 (June, 2004): 692–697. doi: 10.1111/j.1525-1497.2004.30247.x

Varkey, Prathibha, Joanna Peloquin, Darcy Reed, Keith Lindor, and Ilene Harris. "Leadership Curriculum in Undergraduate Medical Education: A Study of Student and Faculty Perspectives." *Medical Teacher* 31, no. 3 (March, 2009): 244–250. doi: 10.1080/01421590802144278

Waldhausen, John. "John H. Gibbon, Jr., Lecture: Leadership in Medicine."
Bulletin of the American College of Surgeons 86, no. 3 (2001): 13–19.

Yukl, Gary, and J. Bruce Tracey. Yukl, G., & Tracey, J. B. (1992).
"Consequences of Influence Tactics Used with Subordinates, Peers, and the
Boss [Electronic version]." Accessed 10/3/2017 from Cornell University, SHA
School site: http://scholarship.sha.cornell.edu/articles/882

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