

A Curriculum to Enhance Resilience in Internal Medicine Interns

Amber-Nicole Bird, MD
Michelle Martinchek, MD
Amber T. Pincavage, MD

ABSTRACT

Background Burnout is a serious concern in graduate medical education. While enhancing resilience in trainees is considered beneficial, there are few studies showing successful interventions.

Objective We developed and implemented a curriculum to teach resilience skills to internal medicine (IM) residents.

Methods Our resilience curriculum focused on 4 small group skill-building workshops: setting realistic goals, managing expectations, letting go after stressful clinical events, and finding gratitude. All sessions were delivered by a chief resident during dedicated teaching time, and combined lectures, group discussions, reflection, and simulated skill-building exercises. Participants were assessed before and after the curriculum using the Connor-Davidson Resilience Scale.

Results Over a period of 2 years, 81 interns participated; 75% (61 of 81) responded prior to participating in the curriculum, and 79% (64 of 81) responded after participation. The majority thought sessions should continue the following year (75%, 48 of 64). Postsession, participants were more comfortable talking about stress and burnout (70%, 44 of 63), were more comfortable talking about medical errors (73%, 46 of 63), and had learned new ways to approach challenges (64%, 41 of 64). Mean resilience scores were lower after the curriculum (72.54 ± 10.18 versus 68.65 ± 10.14 , $P = .034$). Feedback from participants indicated that the sessions fostered a sense of togetherness among peers and provided them with an additional support system.

Conclusions Small group resilience workshops were feasible over 2 years and well received by IM interns, who noted gaining new skills to approach challenges. There was no improvement in resilience scores after the sessions.

Introduction

Graduate medical education programs and their accrediting bodies have increased focus on burnout in medical trainees.^{1–4} Data show a higher rate of depression and burnout in the medical community than the general population.¹ One study found an increase in both the prevalence of depression and the incidence of suicidal ideation during the first months of internship.² Other studies looking at burnout in medical trainees have shown a positive correlation between burnout and levels of depression, decreased empathy, and attrition from the medical profession.^{3–6}

Resilience, the ability to rebound following adverse experiences, is a new area of study in medical education. Preliminary studies have identified lower resilience among residents than the general population,^{2,7} and a study of interns demonstrated that low resilience scores were correlated with depression scores.²

While wellness interventions and curricula exist to address trainee burnout, there are few resident-

focused educational interventions shown to improve resilience.⁸ One resilience program designed for family medicine residents demonstrated acceptance by trainees and increased self-care activities.⁹ A mindfulness-based resilience intervention for residents in several specialties did not improve stress or burnout measures.¹⁰ Recently, there has been a call for more resilience training of residents to address this gap.^{11,12} The American Academy of Pediatrics developed a resilience curriculum for medical students, faculty, and residents, but no assessment data have been reported to date.¹³ We designed a resilience curriculum for internal medicine (IM) interns and assess the impact. In this article, we describe the curriculum design, our experience, and initial outcomes.

Methods

The resilience curriculum was developed and implemented over the 2014–2015 and 2015–2016 academic years at 1 IM residency program. It consisted of 4 small group workshops delivered to first-year IM residents. This curriculum was developed based on a needs assessment of residents from multiple institutions and a presurvey of interns in our program. We reviewed the existing literature and an undergraduate

DOI: <http://dx.doi.org/10.4300/JGME-D-16-00554.1>

Editor's Note: The online version of this article contains the pre- and postcurriculum surveys.

resilience curriculum to assist in the development of skill-building exercises.^{7,11–14}

The 60- to 90-minute sessions were presented during the dedicated ambulatory educational half-days for interns. Standard residency program infrastructure was used for logistics, and no additional funding was required to implement the curriculum. Sessions were facilitated by 1 faculty member (a chief resident), and included 10 to 14 interns. Chief residents received a brief introduction to the workshop content, coaching on small group facilitation skills from an experienced faculty member, and a standardized facilitator guide. They received no formal resiliency training, and chief residents' resilience was not measured prior to selecting facilitators. The workshops covered the topics of setting realistic goals, managing expectations, processing stressful clinical events, and identifying sources of gratitude.¹⁴ Each session consisted of a didactic introduction that was followed by small group discussion, reflection, and skill-building exercises.

The first session focused on introducing the concept of resilience. Interns worked together to define the terms *resilience* and *goals* and to identify specific, attainable, and realistic goals for themselves using a stepwise approach. In the second session, interns compared and contrasted goals and expectations by working through sample clinical cases and brainstorming ways to manage their own expectations. The third session, given during the second year, focused on an introduction to medical errors and adverse events, the hospital reporting system, and independent reflection on personal involvement in adverse events. Residents practiced "removing the 'I' narrative" during a reflective writing exercise, in which they retold a stressful clinical event without first-person pronouns. Resources for getting help for burnout and depressive symptoms were also presented. The final session focused on how gratitude can help build resilience with small group exercises on generating gratitude lists and practicing mental subtraction.¹⁴

Anonymous surveys were distributed to participants at the beginning and end of the curriculum in each year. Precurriculum surveys were collected from August through September 2014 and from August through September 2015; postcurriculum surveys were collected from April through June 2015 and from November 2015 through February 2016.

The Connor-Davidson Resilience Scale, a 25-item scale developed to characterize resilience with prior evidence of validity, was administered and used to calculate participants' resilience scores at each time point.^{2,15} Scores range from 0 to 100, with higher scores indicating higher resilience. This scale has previously been used with medical interns, but it has

What was known and gap

There is interest in promoting resilience in trainees, but data on successful approaches are sparse.

What is new

A 4-session interactive curriculum on resilience taught to internal medicine interns.

Limitations

Temporal effects (added stress with advancement in training) may have influenced the resilience score.

Bottom line

The sessions were feasible and well received, but did not improve participants' resilience scores.

no validity evidence in this population. Surveys additionally evaluated trainee experience with stress, burnout, and medical error involvement and reporting. The questions were created by the authors and were pilot tested in IM residents (provided as online supplemental material). In 2015–2016, a nonproprietary single item burnout measure was added to the survey.¹⁶ The postcurriculum survey contained additional questions regarding learner satisfaction and engagement with this new curriculum.

This study was granted exemption status by the University of Chicago Institutional Review Board.

We analyzed the data using Stata version 11.0 (StataCorp LP, College Station, TX). We used descriptive statistics, chi-square test, Fisher's exact test, and Student's *t* test, as appropriate, to compare pre- and postcurriculum data.

Results

A total of 81 interns participated in the resilience curriculum during the 2014–2015 and 2015–2016 academic years; 75% (61 of 81) completed surveys prior to the curriculum sessions, and 79% (64 of 81) completed surveys after participating in the sessions.

The majority of participants (75%, 48 of 64) stated that the sessions should continue the following year (TABLE 1). Many interns (70%, 44 of 63) reported feeling more comfortable talking about stress and burnout, and 64% (41 of 64) reported having the necessary skills to manage stress and burnout after completing the curriculum. A majority of participants learned new ways to approach challenges (64%, 41 of 64), and just over half used something they learned during the sessions when dealing with a challenge (55%, 34 of 62). In addition, a majority of participants reported feeling more comfortable discussing medical errors (73%, 46 of 63), and indicated that they had an outlet in their program to discuss feelings of stress and burnout (70%, 45 of 64; TABLE 1).

TABLE 1
Postcurriculum Evaluation

	Strongly Disagree/Disagree, % (No./Total)	Neutral, % (No./Total)	Agree/Strongly Agree, % (No./Total)
The resiliency sessions should be continued.	5 (3/64)	20 (13/64)	75 (48/64)
I feel more comfortable talking about stress and burnout with my peers after these sessions.	13 (8/63)	17 (11/63)	70 (44/63)
I have learned a new way to approach stress and burnout.	11 (7/64)	25 (16/64)	64 (41/64)
I have learned new ways to approach challenges in my life.	3 (2/64)	33 (21/64)	64 (41/64)
I have used something I learned in the resiliency sessions.	10 (6/62)	35 (22/62)	55 (34/62)
I have an outlet within my residency program to discuss feelings of stress and burnout.	8 (5/64)	22 (14/64)	70 (45/64)
I feel more comfortable talking about medical errors with my peers after these sessions. ^a	13 (8/63)	14 (9/63)	73 (46/63)
I have the skills to manage stress and burnout.	5 (3/64)	25 (16/64)	67 (43/64)
I found the resiliency sessions helpful.	13 (8/63)	14 (9/63)	73 (46/63)
The knowledge I gained has helped me overcome a difficult experience.	17 (11/63)	32 (20/63)	51 (32/63)

^a Data from the 2014–2015 year only.

The 2014–2015 cohort became more familiar with the university's error-reporting system as a result of the curriculum (78%, 25 of 32 postintervention; 13%, 4 of 32 preintervention; $P < .0001$. This question was only asked in 2014–2015). There was no change in the proportion of interns who reported that stress from work *never* or *rarely* (less than once

a month) interfered with their patient care or relationships, interests, and hobbies outside of work, or in the proportion of interns who reported that stress from work *never* or *rarely* made them feel inferior or inadequate compared with their peers (TABLE 2). More interns reported feeling callous toward people since starting residency, and that

TABLE 2
Interns' Self-Reported Measures of Stress, Burnout, and Support Systems

	Precurriculum, % (No./Total)		Postcurriculum, % (No./Total)		P Value
	Never/Rarely	Sometimes/Always/Often	Never/Rarely	Sometimes/Always/Often	
How often has stress from work interfered with patient care?	48 (29/61)	52 (32/61)	55 (35/64)	45 (29/64)	.42
How often do you feel you have become more callous toward people since you started your residency?	41 (25/61)	59 (36/61)	16 (10/64)	84 (54/64)	.002
How often has stress from work interfered with your relationships outside of work?	30 (18/61)	70 (43/61)	16 (10/62)	84 (52/62)	.08
How often has stress from work interfered with your interests/hobbies outside of work?	8 (5/61)	92 (56/61)	11 (7/64)	89 (57/64)	.60
How often has stress from work made you feel inferior or inadequate compared with your peers?	39 (24/61)	61 (37/61)	25 (16/64)	75 (48/64)	.09

TABLE 3
Resilience Scores Precurriculum and Postcurriculum

	Precurriculum	Postcurriculum	P Value
Low resilience, % (No./total)	36 (22/61)	52 (33/64)	.08
Intermediate resilience, % (No./total)	41 (25/61)	38 (24/64)	.69
High resilience, % (No./total)	23 (14/61)	11 (7/64)	.07
Overall mean CD-25	72.5 ± 10.2 (N = 61)	68.6 ± 10.1 (N = 64)	.034
CD-25 score range	50–100	48–100	

percentage was higher in the postintervention survey (TABLE 2).

Resilience scores were calculated for each intern (TABLE 3). The preintervention mean was 72.5 ± 10.2 (range, 50–100), and the postintervention mean was lower (mean = 68.6 ± 10.1 ; range, 48–100; $P = .034$). The nonproprietary single item burnout measure in 2015–2016 demonstrated that the proportion of interns with symptoms of burnout (score ≥ 3) increased from 1 of 28 preintervention to 8 of 25 postintervention ($P = .009$).

When asked for feedback on the curriculum, participants stated that the sessions provided an opportunity to share struggles they face during training, commenting that the sessions provided “a venue to talk about things we would not otherwise talk about.” In addition, many respondents commented on the sense of community and creation of a shared experience, stating that the sessions gave them the ability to share frustrating moments with colleagues. When prompted for suggestions for improvements, some interns said that the sessions should be held off-site and that background music should be played during small group discussions. They also recommended including a written component for individuals less likely to speak up.

Discussion

This resilience curriculum, which consisted of small group skill-building workshops, was positively received by IM interns. It was feasible and easily incorporated into the existing curriculum without additional costs. The workshop sessions provided interns with a sense of a *shared experience* and an open forum for reflection and discussion with colleagues of challenges faced during their training. Mean resilience scores declined slightly after the intervention, and prevalence of burnout (based on a single item question) increased.

This negative result is similar to outcomes found in resilience interventions in 2 other studies.^{9,10} There are potential reasons resilience scores did not improve. We postulate that resilience fluctuates with the season and level of training. The presurvey was

collected early in the year before interns had significant clinical experience. It is possible that the natural progression is for burnout and resilience to worsen throughout the intern year. This is supported by the increased burnout in the 2015–2016 cohort, and the increased callousness reported by both cohorts in postsurveys. Prior burnout research has shown that intern burnout rates increased during the first year of training, from 4% to over 55%, with a 63% overall burnout rates in IM residents.¹⁷ It is possible that our intervention may have halted this progression since our burnout rate was only 32% postintervention, but the lack of a control group limits our ability to evaluate this. Also, a brief resilience curriculum may not be able to mitigate burnout, and a multifaceted approach focused on resident skill development, as well as other aspects of the clinical learning environment that impact trainee burnout, may be necessary.

We learned several important lessons from this intervention. First, trainees believe that resilience skill-building exercises are useful, and they prefer these exercises to be conducted with small groups of peers and remote from their work environment. We used a chief resident as the facilitator for all sessions, as chief residents often are the first line of support for residents. The facilitator’s ability to share personal experiences was particularly important to help *break the ice* and initiate group discussion. A *pair-and-share* approach, in which participants shared their experiences in pairs prior to discussing as a group, also helped generate conversation. In addition, the curriculum must be delivered within a program that has a larger support system to help trainees.

There are several limitations to our intervention. First, this was a single institution study, and external validity may be limited. Second, the Connor-Davidson Resilience Scale has not been specifically studied in an IM intern population. Our other surveys were not tested for evidence of validity, and respondents may not have interpreted questions as we intended. While response rates to the surveys were good, it is possible that interns with more positive reactions to the curriculum were more likely to respond. Finally, the pre-post design makes it

impossible to rule out temporal and other external effects.

Future work should include expanding into a longitudinal resilience curriculum, and evaluating the natural variation of resilience scores during different seasons, clinical rotations, and training levels.

Conclusion

A resilience curriculum was feasible and well received by interns, but did not improve resilience scores. More in-depth interventions may be required to significantly increase resilience levels.

References

1. Dyrbye LN, West CP, Satele D, et al. Burnout among US medical students, residents, and early career physicians relative to the general US population. *Acad Med*. 2014;89(3):443–451.
2. McFarland DC, Roth A. Resilience of internal medicine house staff and its association with distress and empathy in an oncology setting. *Psychooncology*. May 24, 2016. Epub ahead of print.
3. Sen S, Kranzler HR, Krystal JH, et al. A prospective cohort study investigating factors associated with depression during medical internship. *Arch Gen Psychiatry*. 2010;67(6):557–565.
4. West CP, Shanafelt TD, Kolars JC. Quality of life, burnout, educational debt, and medical knowledge among internal medicine residents. *JAMA*. 2011;306(9):952–960.
5. Shanafelt TD, Bradley KA, Wipf JE, et al. Burnout and self-reported patient care in an internal medicine residency program. *Ann Intern Med*. 2002;136(5):358–367.
6. Beckman TJ, Reed DA, Shanafelt TD, et al. Resident physician well-being and assessments of their knowledge and clinical performance. *J Gen Intern Med*. 2012;27(3):325–330.
7. Bird AN, Pincavage AT. Resident resiliency—how resilient are our medical trainees and how does it relate to stress and burnout? [abstract]. *J Gen Intern Med*. 2015;30(suppl 2):70.
8. Panagioti M, Panagopoulou E, Bower P, et al. Controlled interventions to reduce burnout in physicians: a systematic review and meta-analysis. *JAMA Intern Med*. 2017;177(2):195–205.
9. Brennan J, McGrady A. Designing and implementing a resiliency program for family medicine residents. *Int J Psychiatry Med*. 2015;50(1):104–114.
10. Goldhagen BE, Kingsolver K, Stinnett SS, et al. Stress and burnout in residents: impact of mindfulness-based resilience training. *Adv Med Educ Pract*. 2015;6:525–532.
11. Epstein RM, Krasner MS. Physician resilience: what it means, why it matters, and how to promote it. *Acad Med*. 2013;88(3):301–303.
12. Jennings ML, Slavin SJ. Resident wellness matters: optimizing resident education and wellness through the learning environment. *Acad Med*. 2015;90(9):1246–1250.
13. Serwint JR, Bostwick S, Burke AE, et al. The AAP resilience in the face of grief and loss curriculum. *Pediatrics*. 2016;138(5).pii:e20160797
14. Bird A, Pincavage A. A curriculum to foster resident resilience. MedEdPORTAL Publications. 2016;12:10439. <https://www.mededportal.org/publication/10439>. Accessed July 11, 2017.
15. Connor KM, Davidson JR. Development of a new resilience scale: the Connor-Davidson Resilience Scale (CD-RISC). *Depress Anxiety*. 2003;18(2):76–82.
16. Dolan ED, Mohr D, Lempa M, et al. Using a single item to measure burnout in primary care staff: a psychometric evaluation. *J Gen Intern Med*. 2015;30(5):582–587.
17. Ishak WW, Lederer S, Mandili C, et al. Burnout during residency training: a literature review. *J Grad Med Educ*. 2009;1(2):236–242.



Amber-Nicole Bird, MD, is Assistant Professor of Medicine, Perelman School of Medicine, University of Pennsylvania; **Michelle Martinchek, MD**, is a Fellow, Section of Geriatrics, Department of Medicine, University of Chicago; and **Amber T. Pincavage, MD**, is Associate Professor, Department of Medicine, and Internal Medicine Co-Clerkship Director, University of Chicago.

Funding: This study was funded by the University of Chicago Bucksbaum Institute for Clinical Excellence.

Conflict of interest: The authors declare they have no competing interests.

These results were presented as poster presentations at the Academic Internal Medicine Week, Atlanta, Georgia, October 8–10, 2015; at the Association of Program Directors in Internal Medicine Spring Conference, Houston, Texas, April 26–29, 2015; and at the Society of General Internal Medicine 38th Annual Meeting, Toronto, Ontario, Canada, April 22–25, 2015.

The authors would like to thank John McConville, MD, University of Chicago Internal Medicine Residency Program; Alex Lickerman, MD, American College of Physicians Northern Illinois Chapter; and Marie Brown, MD.

Corresponding author: Amber-Nicole Bird, MD, University of Pennsylvania, Perelman School of Medicine, 3701 Market Street, Suite 640, Philadelphia, PA 19130, 215.662.2250, amber-nicole.bird@uphs.upenn.edu

Received September 5, 2016; revisions received April 26, 2017, and June 5, 2017; accepted June 6, 2017.