

Helping Residents Excel in Team-Based Care: An Interactive Case-Based Interprofessional Education Curriculum

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ABSTRACT

Background: Communication and collaboration with an interprofessional team is vital for patient care, yet teaching these skills to resident physicians faces multiple challenges.

Methods: We developed an interactive, case-based curriculum on interprofessional communication and collaboration and implemented it at a large Veterans Affairs hospital. A pre/post survey study design was used to evaluate the curriculum, with 31 residents completing both surveys (100% response rate).

Results: After the curriculum, there was improvement in the residents' knowledge, comfort, and satisfaction in communicating and collaborating with the interprofessional team. Satisfaction scores with clinic also improved in all measures.

Discussion/Conclusions: Overall, a curriculum aimed at teaching interprofessional communication and collaboration improved residents' comfort and satisfaction in this realm and may help them achieve competence in these challenging-to-teach skills.

to resident physicians in the outpatient setting presents multiple challenges due to time limitations of residents and faculty, space limitations, buy-in from stakeholders, and educational expertise in this area.⁴

The Department of Veterans Affairs (VA) implemented its version of the PCMH—called Patient Aligned Care Team (PACT)—in 2010, and studies have found improvement in patient care measures in VA primary care.⁵ We developed and implemented a curriculum to teach interprofessional communication and collaboration to internal medicine residents with primary care clinic at a large, academic, urban VA hospital.

BACKGROUND

Interprofessional collaboration improves patient outcomes and has led to a shift in primary care to the patient-centered medical home (PCMH), which is based on an interdisciplinary model of care.¹ The National Academy of Medicine identifies working within an interdisciplinary team as a core competency for providing high-quality care, and the Accreditation Council for Graduate Medical Education includes communication and collaboration with the interprofessional team within its internal medicine systems-based practice milestones.^{2,3} Teaching interprofessional collaboration skills

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METHODS

Intervention and Setting

A curriculum, based on work by Nikiforova et al,⁶ was developed with input from the interprofessional care team at the VA hospital. The objectives, cases, questions, and answers were developed then distributed to the interprofessional team for feedback. Feedback was subsequently incorporated into the final version of the curriculum (Appendix). Internal medicine residents (post-graduate years [PGY] 1-3) with continuity clinic at the VA hospital received the curriculum during the 2019-2020 academic year. The curriculum had 7 sessions that were delivered monthly during a required pre-clinic conference session, each lasting 30 minutes. After an introduction session that highlighted the goals, structure, and evidence of PACT, each session focused on a specific interprofessional discipline: licensed practical nurses (LPN), registered nurses (RN), pharmacists, primary care mental health integration (PC-MHI) psychologists and pharmacists, social workers, and registered dietitians. The interprofessional team member, a faculty facilitator, and

Table 1. Mean Rank Comfort and Satisfaction Scores With Patient Aligned Care Team (PACT) Members

| Team Member | Pre-data Mean Rank | Post-data Mean Rank | P value |
|--------------------------------|--------------------|---------------------|---------|
| Medical Support Assistant | | | |
| Comfort | 25.45 | 37.55 | 0.0050 |
| Satisfaction | 26.33 | 34.40 | 0.0480 |
| Licensed Practical Nurse | | | |
| Comfort | 26.95 | 36.05 | 0.0270 |
| Satisfaction | 27.02 | 35.94 | 0.0257 |
| Registered Nurse | | | |
| Comfort | 27.68 | 35.32 | 0.0646 |
| Satisfaction | 28.45 | 34.55 | 0.1125 |
| Social Worker ^a | | | |
| Comfort | 26.70 | 34.30 | 0.0766 |
| Satisfaction | 23.22 | 31.19 | 0.0432 |
| Pharmacist | | | |
| Comfort | 25.47 | 36.35 | 0.0112 |
| Satisfaction | 24.41 | 33.93 | 0.0218 |
| Registered Dietician | | | |
| Comfort | 26.25 | 34.75 | 0.0498 |
| Satisfaction | 21.15 | 29.52 | 0.0311 |
| PC-MHI Therapist ^a | | | |
| Comfort | 25.45 | 36.37 | 0.0122 |
| Satisfaction | 21.48 | 31.23 | 0.0140 |
| PC-MHI Pharmacist ^a | | | |
| Comfort | 22.98 | 36.34 | 0.0020 |
| Satisfaction | 18.08 | 28.71 | 0.0065 |

Abbreviation: PC-MHI, Primary Care-Mental Health Integration.

Note: Measurements were in Likert scale from 1—very uncomfortable/unsatisfied to 5—very comfortable/satisfied.

^aCurriculum session affected by COVID-19 pandemic and delivered via email.

the residents were present for these sessions. The sessions involved case-based discussion of how the interprofessional team member is vital for patient care and how to communicate with the team member. Our curriculum was affected by clinic cancelations due to the COVID-19 pandemic; therefore, we emailed to residents the faculty guide and suggested answers for the sessions on social workers and the PC-MHI team. We did not verify that residents reviewed the material emailed for those sessions.

Outcomes

Residents completed preintervention and postintervention surveys. Our surveys assessed resident knowledge of the PACT members (using yes/no format), as well as comfort and satisfaction levels as it pertains to engaging these members (using Likert scale from 1—very uncomfortable/unsatisfied to 5—very comfortable/satisfied) and measures of resident satisfaction with continuity clinic. We also collected demographic data including resident age, PGY level, and assigned clinic day. Surveys were paper-based and coded to allow for paired data.

Analysis

Paired pre/post survey data were analyzed to evaluate the impact of our curriculum using binomial proportions and Wilcoxon

signed rank test for median comparison with Bonferroni correction using SAS 9.4 14.3. Binomial proportions were used to determine whether the rate of residents who knew how to contact particular PACT team members improved over baseline. The Milwaukee Veterans Affairs Institutional Review Board approved the study.

RESULTS

We had a 100% response rate, with all 31 residents completing both the presurvey and postsurvey. We surveyed 9 PGY1s, 11 PGY2s, and 11 PGY3s.

After the curriculum, there was a positive change in the residents' knowledge of how to contact all PACT members. The pre-intervention data found that most residents knew how to contact LPNs and RNs, 80% and 87%, respectively. This improved to 90% and 97% in the postintervention survey but was not statistically significant. Prior to the curriculum, fewer residents knew how to contact the social worker (65%), pharmacist (55%), registered dietician (29%), PC-MHI therapist (42%) and PC-MHI pharmacist (13%). These categories had the highest percent change between the preintervention to postintervention survey and improved to 81% (social worker), 87% (pharmacist), 58% (registered dietician), 74% (PC-MHI therapist), and 63% (PC-MHI pharmacist), which is an increase of 16%, 32%, 29%, 32%, and 50%, respectively. These improvements were statistically significant, with a *P* value < 0.05. To account for variability from our small sample size, we also calculated a more conservative measure using the upper 95% confidence interval of the baseline proportion, which found the gains for the pharmacist, PC-MHI therapist, and PC-MHI pharmacist were statistically significant (*P* value 0.0333, 0.0458, and < 0.0001, respectively).

Resident comfort and satisfaction as it pertains to collaborating with the PACT members improved after implementation of the curriculum (Table 1). Several improvements in resident comfort and satisfaction were statistically significant (*P* < 0.0062). We also measured satisfaction with several aspects of resident continuity clinic (Table 2), which improved with curriculum implementation.

DISCUSSION

We found that implementation of an interactive, case-based curriculum focused on interprofessional collaboration and communication improved residents' knowledge, satisfaction, and comfort as it pertains to interacting with the interprofessional team. Our data showed that the biggest gains in terms of preintervention to postintervention change were in the interactions with interprofessional members who were less commonly contacted in routine clinical practice. For example, only a small proportion of residents—13%—knew how to contact the pharmacist on the PC-MHI team prior to our curriculum. This improved to 63% after the curriculum. In contrast, many of the residents already knew how to contact the RN—a more commonly contacted PACT member—and felt com-

fortable and satisfied in doing so prior to the intervention. This highlights the need for interprofessional education to ensure that trainees are aware of and comfortable utilizing all the resources available to patients rather than just those most utilized.

Other interventions have been studied to fill this gap in resident education, from simulation sessions to systematic changes to how resident clinic is conducted.⁷⁻¹⁰ Many of these interventions are effective in addressing this gap; however, several of these require specialized training or structural changes that may not be feasible for most programs. We studied the use of a case-based curriculum that could be easily incorporated into already structured didactic sessions in resident continuity clinic as a more accessible solution to teaching interprofessional collaboration and communication during training. Furthermore, we found significant gains in residents' knowledge, comfort, and satisfaction interacting with the interprofessional team members for which the curriculum was emailed rather than delivered in-person due to the COVID-19 pandemic. Hence, these kinds of tools might help bridge the gap in situations where in-person team meetings or education are not feasible.

Our study has limitations. First, it was a single-center study that included a small number of trainees; hence, generalizability could be limited. However, our work builds on previous curricular interventions, suggesting that it may be broadly applicable to improve education in interprofessional collaboration.⁶ Next, it is possible that improvements in outcomes were related to usual progression of clinical training; but gains in interprofessional knowledge, comfort, and satisfaction were seen in senior residents, PGY2s, and PGY3s who had been in the same clinic since their PGY1 year. Additionally, given that some sessions were emailed without requiring confirmation of review of the material, it is unclear what part of the curriculum led to the gains observed in residents' knowledge, comfort, and satisfaction. Lastly, we had planned to assess if improvement in residents' knowledge, satisfaction, and comfort led to improved patient care; however, we were unable to do so because of changes in care delivery during the COVID-19 pandemic. We did not evaluate if our curriculum led to mastery in systems-based practice milestones and think that further study into these outcomes is warranted.

CONCLUSIONS

We believe that incorporating interprofessional education into the curriculum helps address some of the challenges inherent in teaching interprofessional communication and collaboration during residency. It ensures that residents are exposed to the interprofessional team, regardless of scheduling, time and space limitations, and faculty expertise in this topic.

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Table 2. Mean Personal Satisfaction with Continuity Clinic

| Variable | Pre-data Mean Rank | Post-data Mean Rank | P value |
|---|--------------------|---------------------|---------|
| How well primary care provider and registered nurse work together | 28.42 | 34.58 | 0.112 |
| How well primary care provider and other health professionals work together | 27.02 | 35.98 | 0.026 |
| How well primary care provider and administrative staff work together | 24.37 | 38.63 | 0.0007 |
| Nursing support for patients between visits | 28.00 | 35.00 | 0.0722 |
| Appreciation | 27.40 | 35.60 | 0.0496 |
| Job stress | 26.23 | 36.77 | 0.0121 |
| Continuity with patients | 29.16 | 33.84 | 0.2444 |
| Responsibility/ownership for patients | 27.98 | 35.02 | 0.0856 |

Note: Measurements were in Likert scale from 1 – very unsatisfied to 5 – very satisfied.

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Appendix: Available at wmjonline.org

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