— The Practice Is the Curriculum —

The Practice Is the Curriculum

Dana Neutze, MD, PhD; Bryan Hodge, DO; Erika Steinbacher, MD; Charles Carter, MD; Katrina E. Donahue, MD, MPH; Peter Carek, MD, MS

ABSTRACT: The training family medicine residents receive will have a lasting impact on how they deliver care in the future. Evidence demonstrates an imprinting effect based on the training environment itself. Thus, residency training represents a critical time for establishing clinical experiences that embody core primary care principles and ensure excellent care delivery. This paper focuses on the clinical experience in the family medicine practice setting. We have used Starfield's four C's of primary care and added two more: cost and community, as the tools to achieve the triple aim. In reviewing the current state of residency programs across the country, we noted that there was a lack of measurement on how programs were performing when it came to the six C's. We will briefly describe some recent innovative collaboratives among residencies. Next, we examine the six C's of primary care in context of current care. These six C's inform our recommendations for residency training standards to create the family physicians of the future. The overarching theme of these recommendations is the need to measure and report on what we want to ultimately improve.

(Fam Med. 2021;53(7):567-73.)
doi: 10.22454/FamMed.2021.154874
Published Online First May 10, 2021

Family medicine residency training is foundational for creating physicians who care for communities across multiple settings with the goal of achieving the triple aim of improving the patient experience and quality care, while decreasing costs.[1] Research indicates that the resident training environment has a lasting impact on the care physicians deliver for at least two decades after residency completion.[2] Thus this setting provides an opportunity to imprint activities and decisions consistent with high-value care for the next generation of physicians.

Historically, the concept of the model family practice formed the basis of program requirements to augment didactics. This reflected a more physician-centered model that was typical of the time and persists today. Additionally, the requirements focused on specific aspects of a family physician's scope of practice and the specific patient populations served (eg, maternity care, pediatrics). Contrary to this traditional structure that focuses on deconstructed elements of our scope of practice, with the clinic being a supplement to training, we propose that the practice environment itself is the curriculum to model and teach residents how to effectively deliver health care, demonstrate excellence, and achieve the goals of the triple aim.

Simply stated, outstanding medical education occurs best in an environment of outstanding patient care. The upcoming Accreditation Council for Graduate Medical Education (ACGME) review allows for reenvisioning the family medicine residency education and is an ideal time to reexamine Review Committee standards for clinical sites and ensure they meet patients' and society's current and future needs. This is a move beyond just meeting the educational needs of residents. While the triple aim is the goal, the means to achieve this can be found in Starfield's four C's of primary care: first **C**ontact care, **C**ontinuity, **C**omprehensiveness and **C**oordination. Strong evidence indicates improved health outcomes when greater levels of the four C's are achieved.[3,4] Two additional C's impacting health care in the United States include **C**ost and **C**ommunity.[5,6] These six C's are insufficiently addressed by the current ACGME Review Committee (RC) program requirements for family medicine. For residency training environment to ensure these values are met, the

From the Department of Family Medicine, University of North Carolina, Chapel Hill, NC (Drs Neutze and Donahue); Department of Family Medicine, University of North Carolina, Hendersonville, NC (Dr Hodge); Atrium Health Cabarrus Family Medicine, Kannapolis, NC (Dr Steinbacher); Department of Family and Preventive Medicine, University of South Carolina, Columbia, SC (Dr Carter); and Department of Family Medicine, University of Florida Health, Gainesville, FL (Dr Carek).

family medicine practice needs new metrics.

The ACGME Review Committee for family medicine sets forth several structural, process, and outcomes requirements for outpatient training (Table 1). These requirements stipulate that residents have a patient panel, achieve a minimum volume of office visits, and experience a diversity of clinical conditions and patients. However, while these requirements lay a foundation for outpatient resident practice, they allow for interpretation that does not ensure a standardized environment of excellence during these formative years. For example, residents must have 1,650 continuity visits, but there is neither a defined standard metric for continuity nor an

Table 1. Current and Proposed ACGME Standards

Domain	Section	Current ACGME Standard	Additional Recommendations
Empanelment	IV.C.4	Assigned a primary care clinic	
	IV.C.4.c)	Must have a panel (no size specified)	Must provide demographic data on this panel
First contact care/access	IV.C.4.a)	Must be in clinic a minimum of 40 weeks out of the year.	Adopt open access scheduling
	IV.C.4.a).(1)	Must not be away from clinic for more than 8 weeks at a time.	Must measure access for each resident
	IV.C.4.f)	Residents' patient encounters should include telephone visits, e-visits, group visits, and patient-peer education sessions.	Must have a defined process for evaluating competence and independence in virtual care
			Rotation demands should not prohibit timely response to patients.
Continuity	IV.C.4.e)	1,650 in-person clinic visits, of which: 165 visits with patients <10 years of age, and165 visits with patients >60 years of age.	A proportion of these visits can be virtual
	IV.C.4.c)	Must see their panel across a spectrum of settings.	Must measure usual-provider continuity.
	IV.C.4.c).(1)	Long-term care experiences must occur over a minimum of 24 months.	
Comprehensiveness	IV.C.4.b)	Should have a mix of acute, chronic, and wellness visits.	Must measure and provide feedback on referral rate
			By PGY-2 year, panel should include patients with two or more chronic disease states including mental health diagnoses.
			Residents should have an opportunity to be directly involved in the care of conditions currently amenable to primary care that were previously in the realm of specialists such as hepatitis C, HIV, and substance use disorder.
	VI.A.1.b).(2).(a)	Must receive data on quality metrics and benchmarks related to their patient populations.	The FMP must have an established process for quality improvement.
	IV.D.3.b)	Must participate in at least one quality improvement project.	Must participate in a quality improvement project that is integrated into the FMP QI process and addresses practice- or community-level metric.

(Continued on next page)

Table 1: Continued

Domain	Section	Current ACGME Standard	Additional Recommendations
Coordination of care			Residents must participate in a formal transitions-of-care process for hospitalized patients.
			Ability for direct coordination between behavioral health provider and continuity physician whether in person or virtual
Cost	IV.B.1.f).(1).(g)	Understanding health care finances and its impact on individual patients' health decisions.	Residents must have access to basic cost of labs and imaging (at least relative costs).
			Must provide data on cost per member, ordering rates of high-cost imaging for panel
Community	VI.A.1.b).(3).(a).(i)	Activities aimed at reducing health care disparities.	FMP must have a way to document social determinants of health and have community resources available.
			Must have patient representation in an advisory role

Abbreviations: ACGME, Accreditation Council for Graduate Medical Education; PGY, postgraduate year; FMP, family medical practices; QI, quality improvement.

established goal. While visit numbers are controversial, recommendations that will meaningfully improve the care delivered, and thus the educational imprinting achieved, should be prioritized.

In this paper, we outline the current state of family medicine residency practices, recent innovative work, the timely relevance of the six C's, and recommendations for residency clinical site requirements. While the objective is to create family physicians with maximally appropriate scope of practice across multiple settings, this paper focuses on care delivery for the family medicine practice population, which often accounts for the majority of a practicing physician's professional time.

Current State of Residency Practices

Obtaining performance data on the triple aim and the six C's of primary care is challenging because they are not routinely measured. Data from the I3 collaborative, comprised of 10-23 primary care residency programs across four states, suggests wide variability in achieving the triple aim across residency programs.[7,8] In a recent unpublished survey by the American Board of Family Medicine, fewer than half of residents knew the size of their panel and only half knew anything about their panel's demographics or clinical conditions.[9] The Clinic First initiative conducted site visits at 23 residency clinics, finding less than half measured continuity from the patient's perspective, and these rates varied from 21%-81%.[10] Similarly, the Length of Training Pilot, a case control study of 13 residency programs extending training to 4 years, found that defining resident continuity was challenging and needs special attention.[11] Specialty referral rates, an indirect marker of comprehensiveness, also vary widely between programs, 7%-31%.[12] Overall, there is not enough measurement to know how the majority of programs are performing, and, when areas are measured, there is wide variability.

Some lessons can be learned from a few programs examining transformative changes in one or more of the six C's.[13] The Preparing the Personal Physician for Practice (P4) project studied new models of family medicine education, focusing on the patient-centered medical home (PCMH). Fourteen residency programs, selected after a national application process, demonstrated that it was possible for multiple residency programs to actively engage in work to transform the resident educational experience.[14] Early work by the I3 collaborative demonstrated significant improvement in congestive heart failure hospitalization rates by using the Institution for Healthcare Improvement Breakthrough Collaborative design.[15] However, later iterations found that gains towards the triple aim and value-based care remain challenged by the strain to accomplish success across multiple domains simultaneously.[16] Lastly, a Colorado initiative centered on transforming 10 residency practices into PCMHs through coaching and redesign. This work led to increased engagement, team-based care, and continuity with patients.[17] The number of residency programs in these different initiatives was small and the programs were likely more motivated by virtue of being in a collaborative, however, taken together these studies show a desire

and need for clinical redesign in residency practices.

Recommendations

The recommendations below expand the RC requirements to ensure residents train in family medical practices (FMPs) designed to achieve the triple aim (Table 1). Despite the evolving nature of medical practice, the four C's of primary care plus the additional two C's (**C**ost and **C**ommunity) are guiding principles that will help practices achieve the triple aim. Using the principles of the six C's and the available evidence, we recommend the following additional standards to create excellent training practices, and in turn, excellent family physicians.

Even before addressing the six C's, empanelment is critical to a FMP site. It allows us to assess access and enables continuity to be measured. Therefore, all patients of a practice must be empaneled. Panel sizes for residents vary widely across training programs.[18] Some flexibility is needed in panel sizes based on the number of clinic sessions by year at each program. Increases in panel size can result in decreased continuity,[19] thus panel size should be designed to balance visit volume, access and continuity.

First-Contact Care

Family physicians play a principal role as point of first contact for the health system. With more subspecialization by internists and pediatricians, family physicians provide much of the primary care in the United States.[20] Access to primary care is associated with lower cost, better outcomes, and patient satisfaction,[4,21,22] yet there is no RC requirement to measure access. Studies show that one of the easiest and most cost-effective ways to improve clinic availability is open-access scheduling, which reserves some appointments that can only be filled on the same day.[23] Furthermore, technology changes the format in which patients access care and physicians deliver care. For example, the COVID-19 pandemic saw marked acceleration in telehealth visits.[24] For residents to learn the concept of first-contact care, FMPs should:

- Measure individual resident access resident using a standard metric (eg, time to third available);
- Adopt open-access scheduling; and
- Provide virtual (ie, phone or video) visits, and have defined processes for evaluating virtual care competence and independence.

Continuity

Greater care continuity is associated with improved patient outcomes, provider and patient satisfaction, and reduced health care costs.[3,10,25-88] Efforts to ensure timely and convenient access to care may conflict with ensuring continuity with specified providers or even provider teams. Achieving continuity in residency clinics faces additional tensions between assignment to the FMP and required/desired specialty rotations as well as the need to abide by ACGME work hour limits.[11] Despite these challenges, continuity during residency training is essential.

Given the complexities of care and the desire to achieve the triple aim, family physicians must provide continuity within the context of a care team. Development of team care models improves continuity and thus can be a strategy to overcome certain challenges.[25] A potential risk with team care is the dilution of the interpersonal physician-patient relationship which remains a critical element in achieving better outcomes.[29] Interpersonal continuity is also associated with greater self-reported physician meaning and joy in work reported, thereby supporting the critical of goal of provider wellness.[10,27]

Currently there is no ACGME RC requirement to measure continuity in residency FMP's. Trade-offs exist between emphasizing provider-oriented versus patient-oriented continuity and to favor one may hinder the other.[25] One metric has not been shown to lead to superior outcomes over another. Therefore, we do not recommend the type of continuity measurement except that it reflects patient care provided by residents. A baseline requirement for measurement of one or more types of continuity in the FMP would compel sponsoring institutions and health systems to prioritize this metric along with more traditional quality metrics.

To enhance continuity, all programs must:

- Facilitate patient access to their continuity resident physician whether in person, by video, phone or email every workday. Provisions should be established for team coverage when the resident is not available, but rotation demands should not be the determining factor.
- Establish an annually reported metric for continuity (either patient or resident provider-based) that reflects the average for each resident by year end.
- Ensure residents are actively engaged in addressing their patients' needs even if working within a team-care model. Patient messages and test results should be addressed by the assigned resident unless that resident is on vacation or otherwise unavailable.

Comprehensiveness

Primary care physicians coordinate the complex chronic care of patients who often have multiple comorbidities. In a study of 148 primary care practices, 45.2% of patients had two or more chronic conditions.[30] Furthermore, trends in chronic illness burden point to the increasing relevance of a comprehensive primary care specialty where previously specialized conditions will necessarily become generalized. This transition offers a broader role for primary care physicians in areas such as mental health, obesity, addiction, chronic infections (HIV, hepatitis C), palliative care, telehealth, and expanded outpatient care models (eg, "hospital at

home"). Additionally, increasing family physician comprehensiveness of care is associated with lower average payments per patient.[31] Conversely, a recent graduate survey indicated that graduates' actual practice scope was narrower compared with the scope they felt prepared to provide.[32] Thus, ensuring residents continue to provide a comprehensive scope of care will mean balancing training opportunities with what is needed and should be provided in the community setting.

Part of comprehensiveness is focusing on quality of care for both prevention and chronic disease. Residents must not only have access to quality data but must also actively engage in quality improvement (QI). Focusing resident QI work on health care system metrics (ie, aligning with the clinic's focus), can improve engagement and sustainability.[33] It would be challenging to set a target for individual metrics across all residency programs that stays relevant over time, thus, we recommend using externally reported metrics such as an Accountable Care Organization (ACO). The metrics already being reported should serve as the foundation of QI work.

To ensure a comprehensive scope of care, the FMP must:

- Track practice and individual referral rates to subspecialists and provide normative data to residents and FMP leadership to ensure comprehensive care is delivered in the FMP rather than referred.
- Maintain resident panels with multimorbid conditions such that by the second year; each resident must have patients on their panel with two or more chronic diseases.
- Provide opportunity for residents to be directly involved in the care of conditions currently amenable to primary care that were previously in the specialty realm.
- Provide residents with individual and practice-level data on any quality metrics being measured in the clinic.

Coordination of Care

Family physicians need to coordinate care for chronic medical conditions. This means that they need to have communication with the specialists taking care of their patients.[34] One area that has seen advances in care coordination is the integration of behavioral health, leading to improved chronic disease metrics, decreased utilization and reduced costs.[35] Additionally, programs that coordinate discharged patients between the inpatient and outpatient setting have demonstrated decreased emergency department (ED) visits, hospitalizations, and total cost of care.[36]

To train residents in care coordination, FMPs should:

- Establish defined curriculum and training outcomes related to coordination with specialists, including electronic communication and/or teleconsultation.
- Have residents develop competency in formal transitions of care process post-discharge from the hospital.
- Have integrated behavioral health that allows direct coordination between behavioral health provider and continuity physician whether in person or virtual and provides or directly coordinates treatment for substance use disorder.

Cost of Care

A growing obstacle facing health care in the United States is the unsustainable rising cost of care. The United States leads as one of the countries with the highest costs in health care in the world, spending $3.6 trillion per year.[37] High-cost imaging, and ED and hospital utilization are all driving these costs and need to be better managed to contain costs. The Choosing Wisely Campaign is one example of advancing the thinking across specialties to avoid unnecessary tests, treatments, and procedures.[38] Given evidence that residents will have similar cost patterns in their future practice, and very few residents receive feedback on cost or utilization for their panel, it is especially important to ensure their training setting provides cost-conscious care.[9,39]

Cost of care is impacted by many variables including type, location, and coordination of services provided.[40] While there is an RC standard to provide financial performance to residents, the practice management metric does not directly address the financial burden on the patient. In one study, providing imaging utilization data compared to peers there was a decrease from a 4.2-fold variation between the highest and lowest utilizers before the intervention to a 3.3-fold variation afterwards.[41] This suggests providing utilization data may help discourage inappropriate ordering. Curbing costs may be achievable in the future with proper modeling of reviewing utilization costs in residency. To promote cost-conscious care, the FMP should provide:

- Charge data for common laboratory and imaging tests ordered at the FMP to residents and faculty. At a minimum, relative costs should be provided.
- The average cost per patient for a resident's continuity panel and for the practice based on billing data. This can include costs generated in the FMP, plus system-generated costs (eg, hospitalizations, imaging, referrals).
- Ordering rates of high-cost imaging both at the resident and practice level.

Community

Current challenges with widening gaps of health disparities remain rooted in our inability to address the underlying driving systems at the community level.[36,42] Training in community settings that includes public and population health provides the adaptability required to respond to a variety of our patients' needs.[43] Longitudinal and experiential models of training lend themselves to greater appreciation

for cultural competencies and social drivers of health, especially in underresourced settings and areas with significant health care disparities.[44] Patient representation and engagement can also directly influence the practice beyond patient satisfaction scores, to provide a more inclusive, person-centered approach to the experience of care.[45-47] Family medicine residency training must provide opportunities for residents to integrate public and community health into the practice.[48] Additionally, there is a recognized need to improve the curricula and introduce innovative methods to address the social determinants of health.[49] Ultimately, family physician commitment to the societal obligations to prevent disease and promote health of individual patients and communities is highlighted in the shift to value-based payments to improve outcomes.[50] To train in community focused care, FMPs should:

- Define their community served, identify the key attributes of that community, and specify how it correlates to their practice. Recommended considerations include race, ethnicity, primary languages spoken, social characteristics, as well as identified community assessments and partnerships.
- Have patient representation in an advisory role.[51] Options include community advisory boards with a minimum of 50% patient representation or patient advisory boards or councils.
- Assess and mitigate the impact of social determinants of health through use of system and community resources. Improvement metrics in health disparities should be reported as outlined by the ACGME Clinical Learning Environment Review (CLER) process.

Conclusion

Reenvisioning the ACGME standards to promote excellence in clinical practice refocuses our attention to the foundational principles of our discipline and centers the practice as the curriculum for training. Family medicine was built upon the idea that we best serve patients through our long-term relationships occurring across multiple settings. The practices in which we train residents are the most significant levers to impact care delivery and education. The better we train residents in an environment of coordinated, comprehensive, and contiguous person-centered care, the more effectively we will imprint key aspects of care delivery toward the triple aim. Furthermore, by adapting our view of the practice to proactively address population health and value-based care through evidence-informed decision making, we not only benefit cost consciousness, but we also improve opportunities to engage the local communities we serve. In the many areas where our data are currently limited, we need to evaluate and determine our current state if we are to establish best practices. We cannot assume we are providing excellent care without first measuring and evaluating it. Thus, several of our recommendations include this as a first step. As we strive to ensure our specialty retains its reverence and relevance, the challenge ahead will rely upon our ability to rapidly adapt to shifting landscapes, and perhaps there is no better place to start but within and beyond the walls of our residency training practices.

DISCLAIMER: The views expressed in this article are the authors' own and not an official position of their respective institutions.

CORRESPONDING AUTHOR: Address correspondence to Dr Dana Neutze, Department of Family Medicine, University of North Carolina, 590 Manning Dr, Chapel Hill, NC 27514. 984-974-0210. Fax: 919-966-6212. dana_neutze@med.unc.edu.

References

1. Berwick DM, Nolan TW, Whittington J. The triple aim: care, health, and cost. Health Aff (Millwood). 2008;27(3):759-769. doi:10.1377/hlthaff.27.3.759
2. Phillips RL Jr, Petterson SM, Bazemore AW, Wingrove P, Puffer JC. The Effects of training institution practice costs, quality, and other characteristics on future practice. Ann Fam Med. 2017;15(2):140-148. doi:10.1370/afm.2044
3. Bazemore A, Petterson S, Peterson LE, Bruno R, Chung Y, Phillips RL Jr. Higher primary care physician continuity is associated with lower costs and hospitalizations. Ann Fam Med. 2018;16(6):492-497. doi:10.1370/afm.2308
4. Chang C-H, Stukel TA, Flood AB, Goodman DC. Primary care physician workforce and Medicare beneficiaries' health outcomes. JAMA. 2011;305(20):2096-2104. doi:10.1001/jama.2011.665
5. Dieleman JL, Baral R, Birger M, et al. US spending on personal health care and public health, 1996-2013. JAMA. 2016;316(24):2627-2646. doi:10.1001/jama.2016.16885
6. Houlihan J, Leffler S. Assessing and addressing social determinants of health: a key competency for succeeding in value-based care. Prim Care. 2019;46(4):561-574. doi:10.1016/j.pop.2019.07.013
7. Donahue KE, Reid A, Lefebvre A, Stanek M, Newton WP. Tackling the triple aim in primary care residencies: the I3 POP Collaborative. Fam Med. 2015;47(2):91-97.
8. Page CP, Reid A, Drostin C, Newton WP. Variation in triple aim measures: implications of clinical signatures in family medicine residency programs. J Grad Med Educ. 2018;10(5):548-552. doi:10.4300/JGME-D-17-00470.1
9. Re-envisioning family medicine residency education: resident survey, American Board of Family Medicine, unpublished data.
10. Dubé K, Gupta R, Kong M, Knox M, Bodenheimer T. Continuity of care in residency teaching practices: Lessons from "bright spots." Perm J 2018;22:18-028. DOI: https://doi.org/10.7812/TPP/18-02
11. Carney PA, Conry CM, Mitchell KB, et al. The Importance of and the Complexities Associated With Measuring Continuity of Care During Resident Training: Possible Solutions Do Exist. Fam Med. 2016;48(4):286-293.
12. Gwynne M, Page C, Reid A, Donahue K, Newton W. What's the Right Referral Rate? Specialty Referral Patterns and Curricula Across I3 Collaborative Primary Care Residencies. Fam Med. 2017;49(2):91-96.
13. Bodenheimer T, Aulakh S, Kong M, Koonce T. Profiles of Three High-Performing Primary Care Residency Clinics. AAMC; 2018.
14. Carney PA, Eiff MP, Waller E, Jones SM, Green LA. Redesigning Residency Training: Summary Findings From the Preparing the Personal Physician for Practice (P4) Project. Fam Med. 2018;50(7):503-517. doi:10.22454/FamMed.2018.829131
15. Newton W, Baxley E, Reid A, Stanek M, Robinson M, Weir S. Learnings From the I3 Collaborative. Fam Med. 2011;43(7):495-502.
16. Donahue KE, Reid A, Baxley EG, et al. Triple aim is triply tough: can you focus on three things at once? Fam Med. 2018;50(3):179-187. doi:10.22454/FamMed.2018.885946
17. Jortberg BT, Fernald DH, Dickinson LM, et al. Curriculum redesign for teaching the PCMH in Colorado family medicine residency programs. Fam Med. 2014;46(1):11-18.
18. Gupta R, Barnes K, Bodenheimer T. Clinic first: 6 actions to transform ambulatory residency training. J Grad Med Educ. 2016;8(4):500-503. doi:10.4300/JGME-D-15-00398.1

19. Francis MD, Zahnd WE, Varney A, Scaife SL, Francis ML. Effect of number of clinics and panel size on patient continuity for medical residents. J Grad Med Educ. 2009;1(2):310-315. doi:10.4300/JGME-D-09-00017.1
20. Dalen JE, Ryan KJ, Alpert JS. Where have the generalists gone? They became specialists, then subspecialists. Am J Med. 2017;130(7):766-768. doi:10.1016/j.amjmed.2017.01.026
21. Forrest CB, Starfield B. The effect of first-contact care with primary care clinicians on ambulatory health care expenditures. J Fam Pract. 1996;43(1):40-48.
22. Batbaatar E, Dorjdagva J, Luvsannyam A, Savino MM, Amenta P. Determinants of patient satisfaction: a systematic review. Perspect Public Health. 2017;137(2):89-101. doi:10.1177/1757913916634136
23. Ansell D, Crispo JAG, Simard B, Bjerre LM. Interventions to reduce wait times for primary care appointments: a systematic review. BMC Health Serv Res. 2017;17(1):295. doi:10.1186/s12913-017-2219-y
24. Doraiswamy S, Abraham A, Mamtani R, Cheema S. Use of telehealth during the COVID-19 pandemic: scoping Review. J Med Internet Res. 2020;22(12):e24087. doi:10.2196/24087
25. Walker J, Payne B, Clemans-Taylor BL, Snyder ED. Continuity of care in resident outpatient clinics: a scoping review of the literature. J Grad Med Educ. 2018;10(1):16-25. doi:10.4300/JGME-D-17-00256.1
26. Olaisen RH, Schluchter MD, Flocke SA, Smyth KA, Koroukian SM, Stange KC. Assessing the longitudinal impact of physician-patient relationship on functional health. Ann Fam Med. 2020;18(5):422-429. doi:10.1370/afm.2554
27. Scott JG, Cohen D, Dicicco-Bloom B, Miller WL, Stange KC, Crabtree BF. Understanding healing relationships in primary care. Ann Fam Med. 2008 Jul-Aug;6(4):315-22. doi: 10.1370/afm.860.
28. Saultz JW, Lochner J. Interpersonal continuity of care and care outcomes: a critical review. Ann Fam Med. 2005;3(2):159-166. doi:10.1370/afm.285
29. Rodriguez HP, Rogers WH, Marshall RE, Safran DG. Multidisciplinary primary care teams: effects on the quality of clinician-patient interactions and organizational features of care. Med Care. 2007;45(1):19-27. doi:10.1097/01.mlr.0000241041.53804.29
30. Ornstein SM, Nietert PJ, Jenkins RG, Litvin CB. The prevalence of chronic diseases and multimorbidity in primary care practice: a PPRNet report. J Am Board Fam Med. 2013;26(5):518-524. doi:10.3122/jabfm.2013.05.130012
31. Bazemore A, Petterson S, Peterson LE, Phillips RL Jr. More comprehensive care among family physicians is associated with lower costs and fewer hospitalizations. Ann Fam Med. 2015;13(3):206-213. doi:10.1370/afm.1787
32. Carek PJ, Mims L, Kirkpatrick S, et al. Does community- or university-based residency sponsorship affect graduate perceived preparation or performance? J Grad Med Educ. 2020;12(5):583-590. doi:10.4300/JGME-D-19-00907.1
33. Bodenheimer T, Dickinson WP, Kong M. Quality improvement models in residency programs. J Grad Med Educ. 2019;11(1):15-17. doi:10.4300/JGME-D-18-00556.1
34. Vimalananda V, Dvorin K, Fincke BG, Tardiff N, Bokhour BG. Patient, PCP, and specialist perspectives on specialty care coordination in an integrated health care system. J Ambul Care Manage. 2018;41(1):15-24. doi:10.1097/JAC.0000000000000219
35. Christian E, Krall V, Hulkower S, Stigleman S. Primary care behavioral health integration: promoting the quadruple aim. N C Med J. 2018;79(4):250-255. doi:10.18043/ncm.79.4.250
36. Berkowitz SA, Parashuram S, Rowan K, et al; Johns Hopkins Community Health Partnership (J-CHiP) Team. Association of a care coordination model with health care costs and utilization: The Johns Hopkins Community Health Partnership (J-CHiP). JAMA Netw Open. 2018;1(7):e184273. doi:10.1001/jamanetworkopen.2018.4273
37. Hartman M, Martin AB, Benson J, Catlin A; National Health Expenditure Accounts Team. National health care spending in 2018: growth driven by accelerations in Medicare and private insurance pending. Health Aff (Millwood). 2020;39(1):8-17. doi:10.1377/hlthaff.2019.01451
38. Choosing Wisely. https://www.choosingwisely.org. Accessed November 15, 2020.
39. Chen C, Petterson S, Phillips R, Bazemore A, Mullan F. Spending patterns in region of residency training and subsequent expenditures for care provided by practicing physicians for Medicare beneficiaries. JAMA. 2014;312(22):2385-2393. doi:10.1001/jama.2014.15973
40. Davis K, Carper K. Statistical Brief #381: Use and Expenses for Office-Based Physician Visits by Specialty, 2009: Estimates for the U.S. Civilian Noninstitutionalized Population. Rockville, MD: Agency for Healthcare Research and Quality; August 2012. https://www.meps.ahrq.gov/data_files/publications/st381/stat381.shtml. Accessed April 14, 2021.
41. Halpern DJ, Clark-Randall A, Woodall J, Anderson J, Shah K. Reducing imaging utilization in primary care through implementation of a peer comparison dashboard. J Gen Intern Med. 2021;36(1):108-113. doi:10.1007/s11606-020-06164-8
42. Jones L, Wells K. Strategies for academic and clinician engagement in community-participatory partnered research. JAMA. 2007;297(4):407-410. doi:10.1001/jama.297.4.407
43. Hughes LS, Tuggy M, Pugno PA, et al. Transforming training to build the family physician workforce our country needs. Fam Med. 2015;47(8):620-627.
44. Jacobs C, Seehaver A, Skiold-Hanlin S. A longitudinal underserved community curriculum for family medicine residents. Fam Med. 2019;51(1):48-54. doi:10.22454/FamMed.2019.320104
45. Carman KL, Dardess P, Maurer M, et al. Patient and family engagement: a framework for understanding the elements and developing interventions and policies. Health Aff (Millwood). 2013;32(2):223-231. doi:10.1377/hlthaff.2012.1133
46. Newton WP, Atkinson H, Parker DL, Gwynne M. Bringing patients into the patient-centered medical home: lessons learned in a large primary care practice. N C Med J. 2015;76(3):190-193. doi:10.18043/ncm.76.3.190
47. Sharma AE, Willard-Grace R, Willis A, et al. "How can we talk about patient-centered care without patients at the table?" Lessons learned from patient advisory councils. J Am Board Fam Med. 2016;29(6):775-784. doi:10.3122/jabfm.2016.06.150380
48. Gotler RS, Green LA, Etz RS. What 1966 can teach us about the future of primary vare: the case for communities of slution. Milbank Memorial Fund; 2020. doi:10.1599/mqop.2020.0610
49. Gard LA, Peterson J, Miller C, et al. Social determinants of health training in U.S. primary care residency programs: a scoping review. Acad Med. 2019;94(1):135-143. doi:10.1097/ACM.0000000000002491
50. Hillary W, Justin G, Bharat M, Jitendra M. Value based healthcare. Advances in management. 2016;9(1):1-8.
51. Bath J, Wakerman J. Impact of community participation in primary health care: what is the evidence? Aust J Prim Health. 2015;21(1):2-8. doi:10.1071/PY12164