



Implementation and Preliminary Outcomes of the Nation's First Comprehensive 4-year Residency in Family Medicine

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BACKGROUND: Extending the residency curriculum to 4 years has been proposed as a logical innovation in response to the Future of Family Medicine Report given the increasing complexity of medical care and reduction in available training time due to duty hour restrictions. Middlesex Hospital, a participant in the P⁴ Initiative, is the first family medicine residency program to require a comprehensive 4-year curriculum for all residents.

METHODS: Over a 4-year time frame, the program transitioned from 8-8-8 to 6-6-6 staffing. The existing 3-year educational core of the program was left intact, and six additional core rotations and 7-month tracks of curricular enhancement were added. The residency practice transformed to a Patient-centered Medical Home (PCMH).

RESULTS: Transition to a 4-year residency curriculum has proved smooth. Our funding model is sustainable, and practice income has increased. We have had no difficulty maintaining accreditation despite an innovative curriculum. A 4-year curriculum has resulted in substantially increased applicant interest and improved Match rates. The introduction of tracks has appealed to residents and has generated many positive spin-offs to the educational program as a whole. Transition to a PCMH has been of great value to both our patients and our learners.

CONCLUSIONS: Transition to a comprehensive 4-year curriculum has been successful and has provided many benefits to our learners, practice, and educational program. Our graduates are substantially better prepared for practice.

(Fam Med 2011;43(7):510-3.)

In 2004, the Future of Family Medicine Report called for a period of innovation and experimentation in the training of family physicians.¹ In response, the Preparing the Personal Physician for Practice (P⁴) initiative, led by the Association of Family Medicine Residency Directors, American Board of Family Medicine, and TransforMED, a practice redesign initiative of the American Academy of Family Physicians, began facilitating educational

innovation in residency programs. Novel approaches to the scope, content, place, structure of training, and measurement of competency were encouraged.² After a competitive national selection process in 2007, 14 residency programs were selected to participate.

Extending the residency curriculum to 4 years has been proposed as a logical innovation given the increasing complexity of medical care and reduction in available training

time due to duty hour restrictions.³⁻⁵ Recent additional reductions in duty hours announced in September 2010 have provided additional focus on this issue. Surveys of medical students and residency directors have demonstrated support for the concept.^{6,7} Six of the P⁴ programs are modeling an extension of training time to 4 years, largely on a voluntary basis. An optional 4-year curriculum has also been successfully modeled by the University of Arizona.⁸ Areas of concentration within residency training have been proposed.^{9,10} Recent national focus on the Patient-centered Medical Home (PCMH) has resulted in calls for it to be adopted within residency training.¹¹ Middlesex Hospital is the first family medicine residency program to require a comprehensive 4-year curriculum incorporating all of these elements for all residents.

Methods

The Middlesex Hospital Family Medicine Residency is an unopposed residency program based at a community hospital where family medicine is the dominant mode of primary health care delivery. Prior to 2006, the residency program had a traditional 3-year curriculum with 8-8-8 resident staffing. In 2007, the program, with the support of our

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parent institution, began a transition to a 6-6-6-4-year model. Our choice to reduce our entering class size and maintain a stable overall resident compliment was driven by the limited capacity of our community setting to accommodate additional residents for core rotations, limited office capacity, and concerns about the potential financial impact of reduced Medicare GME reimbursement. All preexisting core rotations were left intact, although redistributed over 4 years. Six additional new core rotations in sports medicine, developmental pediatrics, pediatric emergency medicine, practice management, systems medicine, and home care were added. Seven-block tracks of curricular enhancement in integrative medicine (in partnership with the University of Arizona Fellowship), global/community health, maternal/child health, geriatrics/palliative medicine, academics/leadership (in partnership with the Lake Erie College of Osteopathic Medicine Masters of Medical Education Program), behavioral medicine, or a personalized track were integrated into

the third and fourth year of training (Table 1). Transformation of the office practice into a PCMH was a requirement of participation in the P⁴ Initiative as well as a programmatic passion and was carried out in concert with other curricular changes.

Residents who entered in 2005, 2006, and 2007 were offered the opportunity to stay for an optional fourth year. All entering residents beginning in 2008 (graduation year 2012) are required to complete the full 4-year curriculum. Requirements for certification by the American Board of Family Medicine are not completed until the end of the fourth year.

Results

Transition in resident compliment has been relatively smooth, with total residents fluctuating between 24 and 26. Forty percent of residents during the transition (graduation years 2009–2011) elected an optional fourth year. To date we have graduated three classes of 4-year residents (2009, 2010, and 2011). The last class of residents with 3 years of training

graduated in 2010. All residents graduation years 2011 and beyond are committed to 4 years of training. Two residents have been lost to attrition since 2007, neither for reasons related to the 4-year curriculum.

We have remained fully accredited by the Accreditation Council on Graduate Medical Education throughout our transition. We were granted an Innovation Waiver by the Family Medicine Review Committee to “extend 3 years of accredited training over a 4-year time frame.” No concerns related to our 4-year curriculum were raised at our most recent review in September 2010.

Residency financial performance has improved. Since we operate above our Medicare GME reimbursement cap, adding fourth-year residents that are not fully reimbursed by Medicare has not reduced our GME income to date. Further, fourth-year residents generate sufficient income (an average of \$80,000 per resident) from patient care to cover any potential future shortfall in GME reimbursement that could develop when we have full classes of

Table 1: Master Rotation Schedule

PGY-1

Orientation	Medicine Inpatient	FM Inpatient	Pediatrics Inpatient	Pediatrics Outpatient	OB	Cardiology	Dermatology	Elective
	2 blocks		2 blocks	2 blocks				2 blocks

PGY-2

Medicine Inpatient	FM Inpatient	OB	Surgery	ENT/Ophtho	Gynecology	ICU	Peds	ER/NF	Elective
2 blocks					2 blocks				2 blocks

PGY-3

Orient/NF	Medicine Inpatient	FM Inpatient	Surgery	Develop Pediatrics	ER/NF	Palliative Medicine	Orthopedics	Track
					2 blocks		2 blocks	3 blocks

PGY-4

Medicine Inpatient	FM Inpatient	Sports Med	Systems Med/NF	Practice Mgmt	Homecare/NF	Neuro/Geriatrics	Urology	Pediatric ER	Track
									4 blocks

NF—night float

fourth-year residents. Improvement in practice efficiency and coding as part of our PCMH transformation has resulted in a 19% increase in net income per patient visit since 2007, and we believe additional increases are achievable. The only additional expense associated with transition to a 4-year curriculum has been one additional faculty salary.

Our residents complete 11,500 hours of training over the course of their 4-year residency. They average 2,700 outpatient office visits and 70 obstetrical deliveries (Table 2). Resident track selection has been widely distributed (Table 3). Our 4-year graduates practice in a wide variety of urban, suburban, and rural settings; are involved in outpatient, inpatient, obstetrical, and academic practice; and are all utilizing the additional skills acquired through their tracks in areas such as integrative medicine, geriatrics, obstetrics, and medical education.

Resident satisfaction with their training is high. In each of the past 3 years, 88% of our residents indicated that they are somewhat or very satisfied with their training, compared with 81% for all P⁴ programs (Personal communication, P⁴ Evaluation Team). The opportunity to customize their education through participation in tracks has been particularly appealing to residents.

Applicant interest in our residency program has risen dramatically. Applications from US seniors have increased 77% between 2007 and 2011, and completed interviews increased 92% despite adoption of more stringent interview criteria. Similar to other P⁴ programs, our Match rate has not been adversely affected.¹² Overall, we feel our curricular innovation has resulted in substantially improved resident recruitment.

We have made substantial progress in our practice transition to a PCMH, which we view as one of our most valuable innovations. We have implemented an electronic health record, team-based care, group visits,

Table 2: Selected Resident Clinical Exposures

	3-year Curriculum	4-year Curriculum
Training hours	8,600	11,500
Office visits	1,750	2,700
OB deliveries	50	70

a patient advisory board, chronic disease management, and a variety of practice management initiatives. Patient access to care has improved, with 100% availability of same-day appointments. Measures of patient satisfaction have increased. All three of our practice sites have achieved Level 3 PCMH recognition from the National Committee for Quality Assurance (NCQA).

We have improved clinical outcomes for our patients through multidisciplinary quality improvement teams. Compliance with immunization updating at every office visit has risen from 27% to 90% over the past year. The percentage of children who completed their primary vaccination series rose from 48% to 73% over the same period. The rate of preterm birth among our obstetrical patients has declined from 13% to 5% over the past 2 years. Our rate of screening for postpartum depression has risen from 47% to 86% over the same period. Mammography rates in women over age 40 have increased 13% over the past 2 years.

Discussion

Completing the transition from a 3- to 4-year curriculum has required

overcoming a number of logistical challenges. These have included transitional resident scheduling with residents on 3-year and 4-year curricula in the program at the same time, ensuring complete coverage of all inpatient services with a smaller incoming class size and negotiating changes in resident expectations regarding on-call and inpatient responsibilities on a year-to-year basis during the transition. Curriculum development for six additional core rotations and seven tracks was a substantial 3-year undertaking that required the hiring of an additional faculty member. Guiding residents through the track selection process has proved critical. The scheduling of both block and longitudinal track activities has proved complex. Careful communication, flexibility on the part of both residents and faculty, and close adherence to a detailed 4-year timeline have been key success factors.

Data collection in support of the evaluation of our curricular transition is ongoing. We plan to publish more in-depth findings in coming years as a larger cohort of residents completes our 4-year curriculum and enters practice.

Table 3: Resident Track Selections

Track	Residents Participating
Academics	3
Behavioral health	2
Global/community health	1
Geriatrics/palliative medicine	4
Integrative medicine	5
Maternal/child health	5
Personalized	5

In summary, transition to a 4-year residency curriculum has proved smooth and has provided numerous benefits to our learners, practice, and educational program. Our funding model is sustainable, and practice financial performance has improved during our transition. We have had no difficulty maintaining accreditation despite an innovative curriculum. Our 4-year curriculum has resulted in substantially increased applicant interest and improved Match rates. Resident satisfaction with their training is high. The introduction of tracks has particularly appealed to residents and has generated many positive spin-offs to the educational program as a whole. Transition to a PCMH has been of great value to both our patients and our learners. Graduates of our 4-year curriculum are substantially better prepared for practice as a result of substantially increased clinical and curricular exposures, individualized training opportunities, enhanced education in practice management,

and 4 years of practice in a mature PCMH.

ACKNOWLEDGMENTS: The authors would like to gratefully acknowledge the assistance of the P⁴ Evaluation Team at Oregon Health & Science University in developing our outcomes data.

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