



# Using Accelerated Pathways as a Framework to Build Curricular Efficiency and Support Individualized Education



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## Purpose:

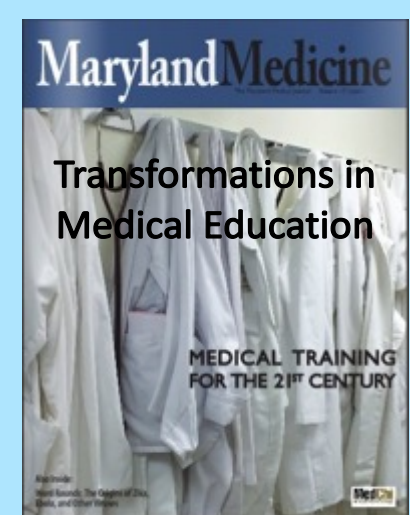
For more than a decade, prominent organizations have called for educational reform to better align medical training with national healthcare needs. Education that is competency-based and individualized is encouraged. Student debt and the national shortage of physicians should be addressed.

## Key features of the accelerated programs:

- Medical school in 3 years, followed by residency training at Hershey
- Linkage of UME and GME for educational continuity (for six or more years)
- Customized curriculum to support the students' chosen specialty
- Course work during summer between years 1 and 2
- Clinical training starts in the spring of year 2
- USMLE Step I board exam until taken after clerkships
- 1 - 4 students selected annually depending on the accelerated program

## Methods:

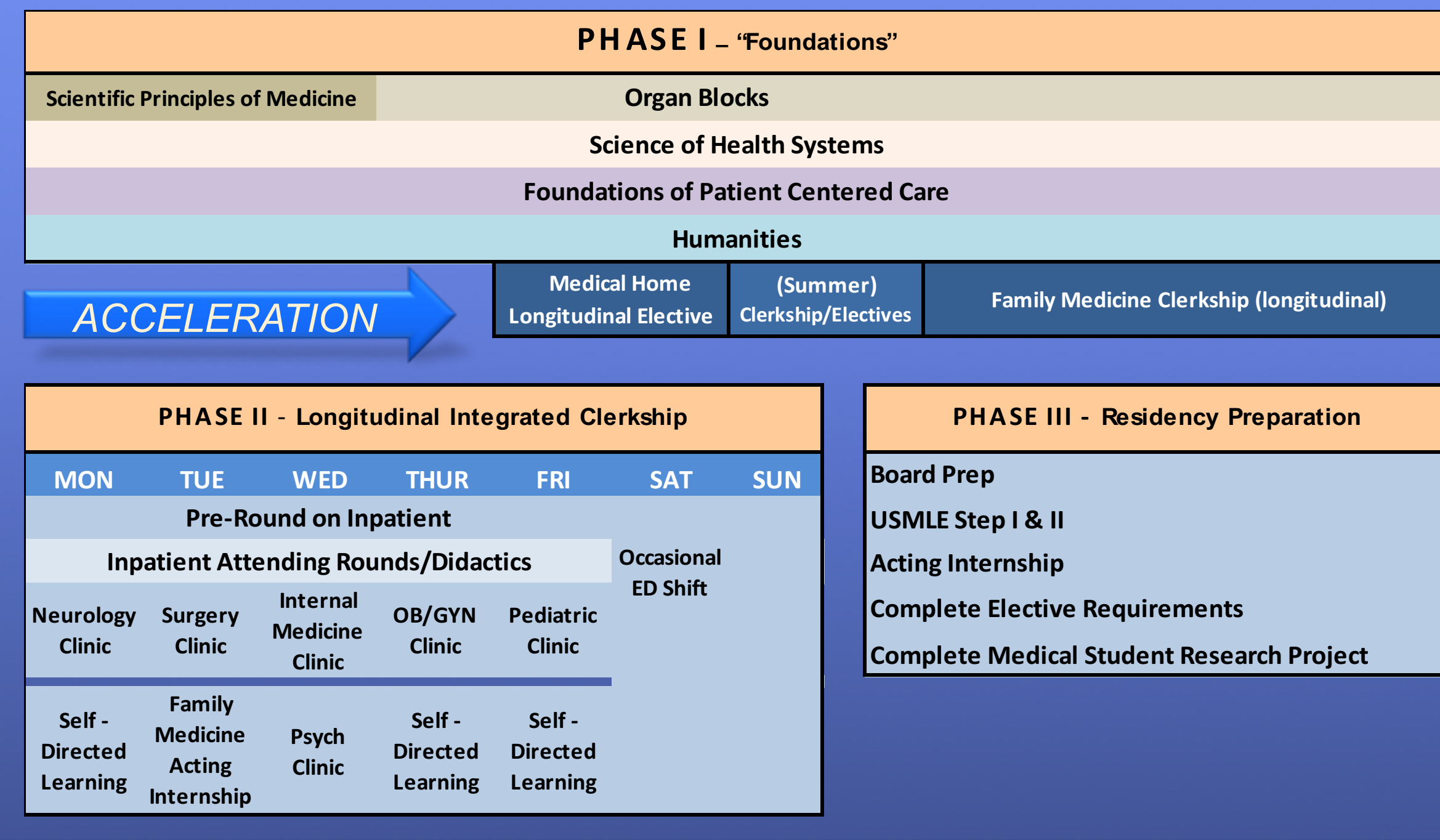
Penn State College of Medicine launched the first 3-year accelerated program in Family Medicine in 2014 with the goals to reduce student debt, align training with the nation's healthcare needs, and to build primary care workforce capacity. Building on the success of the pilot program, Penn State COM now offer accelerated pathways in the following:



- Family and Community Medicine (3+3)
- Emergency Medicine (3+3)
- General Internal Medicine (3+3)
- Neurosurgery (3+7)
- Orthopedics (3+5)
- Accelerated Physician Scientist (4 years)

Purposeful curricular design helps to ensure consistent, efficient and effective learning, allowing students to achieve the competencies required for graduation and the programs to meet its goals and mission.

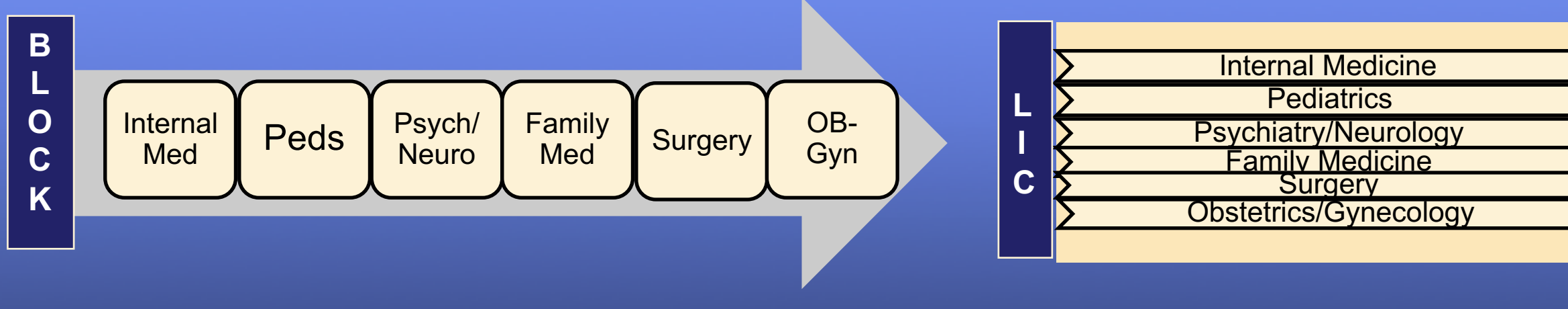
## Exhibit A: Family Medicine Accelerated Program with Phase II in the format of Longitudinal Integrated Clerkship (LIC): 43 Weeks



## Exhibit B: Phase II in Block Clerkship: 43 Weeks

15 Weeks					
Orient	Medicine	Surgery	Med/Surg Subspecialty	Career Exploration and Synthesis	Assessment
4 weeks	4 weeks	4 weeks	4 weeks (2+2)	2 weeks of selectives	1 week
Longitudinal EM AI, Longitudinal Integrated Science					
15 Weeks					
Orient	Neuro	UMDH	Psych	Career Exploration and Synthesis	Assessment
4 weeks	4 weeks	4 weeks	4 weeks	2 weeks of selectives	1 week
Longitudinal EM AI, Longitudinal Integrated Science					
15 Weeks					
Orient	Ob/Gyn	Pediatrics	Study Elective	USMLE I & II	Assessment
4 weeks	4 weeks	4 weeks	4 weeks	2 week	1 week
Longitudinal EM AI, Longitudinal Integrated Science					

## Clerkship Models



## Results:

The accelerated program was launched in 2014. Currently there are 7 students enrolled in the Family Medicine accelerated program and 1 student in the Emergency Medicine accelerated program. Each of the accelerated pathways has designed their curriculum to support individualized education and career development. To enhance curricular efficiency and continuity, some of the accelerated pathways are using the longitudinal integrated clerkships (LIC) format during phase II. Other programs are using the traditional block clerkship model in the clinical year. Student feedback has been positive. Penn State has joined a consortium of 12 schools with accelerated programs to share best practices and to conduct research.

## Student Testimony:

"...three year program is not a "shortcut" to finishing medical school; all the requirements for the traditional fourth year curriculum are being met. It is not merely about saving money... it is not about foregoing extra learning in favor of earlier advancement to residency. What it does allow is earlier-than-early exposure to clinical education and a "big picture" perspective on "why we are really here" that can get lost in the conventional two first years. This type of program is not simply about a shorter education, but a better education."

## Conclusions/Discussion:

With rising student debt and the national call for individualized education, there is renewed interest in 3-year programs, which were piloted in the 1970s. As part of an ongoing curricular improvement initiative, Penn State College of Medicine is developing and implementing several accelerated pathways. The goal is not to simply compress existing programs but rather to design innovative training to better align and integrate to create a well-defined mission that benefits both the students and the public.

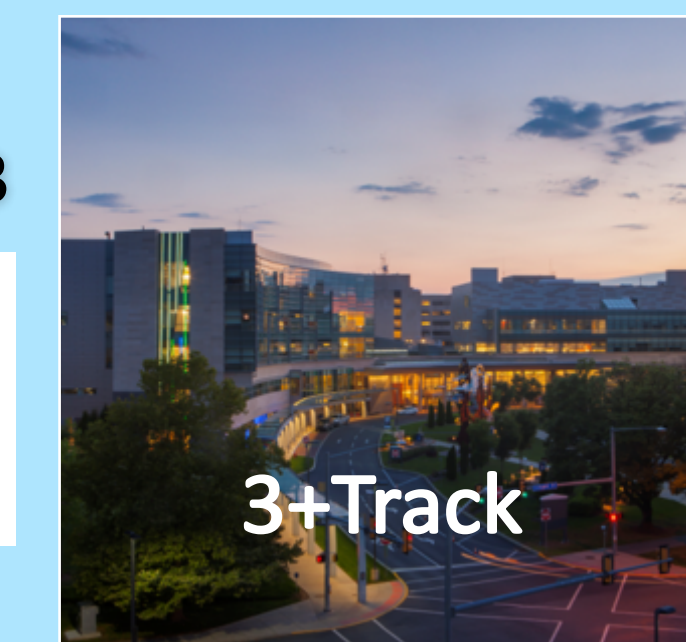
## Accelerated MD Programs @ Penn State

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### Emergency Medicine Accelerated Program at Penn State (EM-APPS)

The 3+3 Emergency Medicine Accelerated Program sees students completing their medical school education in three years, followed by three years of emergency medicine residency training at Penn State. Students will have the opportunity to save one year of tuition and enter practice one year earlier.

By blending a three-year program with the longitudinally integrated curriculum approach, graduates will be skilled emergency physicians who will be well trained to practice in a field noted for its flexible schedule, diagnostic challenges and variety of cases encountered.

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### Internal Medicine Accelerated Program at Penn State (IM-APPS)

The 3+3 Internal Medicine Accelerated Program allows students to complete medical school in 3 years, followed by 3 years of internal medicine residency training at Penn State. Students will have the opportunity to save one year of tuition and enter practice one year earlier.

By blending a three-year program with the longitudinally integrated curriculum approach, graduates will emerge as skilled internists, ready to integrate seamlessly into the ever-changing field of primary care delivery. Opportunities also exist for additional fellowship training in the Division of General Internal Medicine following residency.

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### Neurosurgery Accelerated Program at Penn State (NS-APPS)

The 3+7 Neurosurgery Accelerated Program allows students to complete medical school in 3 years, followed by 7 years of neurosurgery residency training at Penn State. Students will have the opportunity to save one year of tuition and enter practice one year earlier.

During an innovative 7-year program, graduates will learn from 23 dedicated Neurosurgery faculty, each of whom is either board-certified or internationally recognized in their subspecialty within neurosurgery. Penn State Neurosurgery is a leader in neurosurgical research, presently ranked among the top 12 programs in the country for federal grant money.

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### Orthopaedic Accelerated Program at Penn State (O-APPS)

The 3+5 Orthopaedic Accelerated Program allows students to complete medical school in 3 years, followed by 5 years of internal medicine residency training at Penn State. Students will have the opportunity to save one year of tuition and enter practice one year earlier.

With curricular innovation, early mentoring, and extensive exposure to the clinical and didactic experiences of Orthopaedics, we will prepare graduates to be well-rounded physicians who also have the competencies necessary to enter this highly competitive surgical specialty.

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# FMAPPS CURRICULAR TEMPLATE

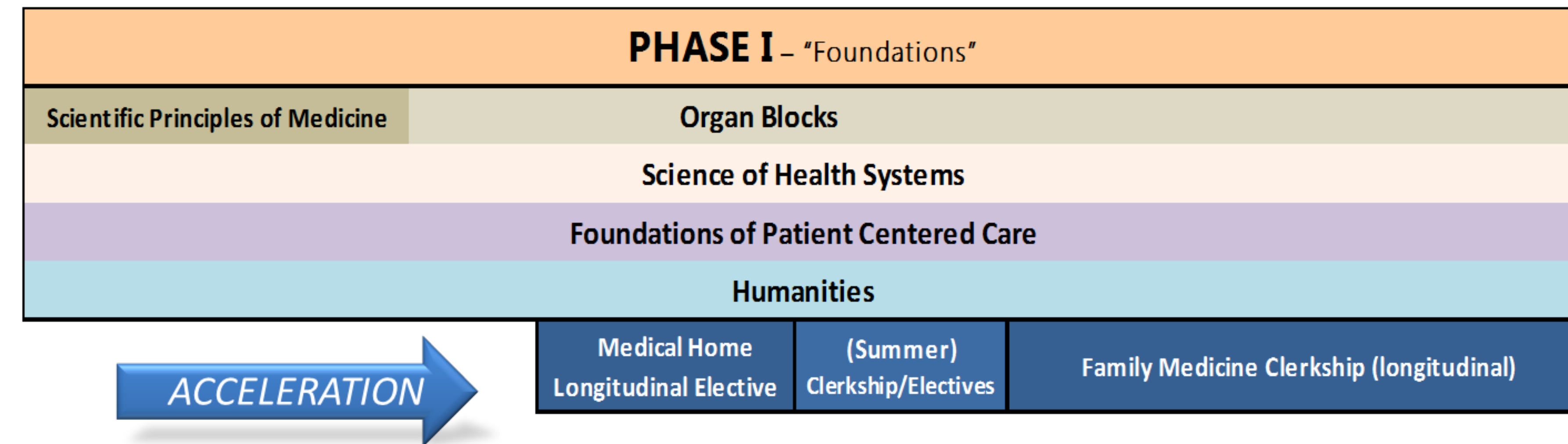


How to do medical school in three years



Envisioning Transformations in Medical Education

Leadership from Penn State College of Medicine and its Family Medicine Accelerated Program welcome students in 2016. These students will complete three years of medical school followed by three years of family medicine residency.



PHASE II - Longitudinal Integrated Clerkship						
MON	TUE	WED	THUR	FRI	SAT	SUN
Pre-Round on Inpatient						
Inpatient Attending Rounds/Didactics					Occasional ED Shift	
Neurology Clinic	Surgery Clinic	Internal Medicine Clinic	OB/GYN Clinic	Pediatric Clinic		
Self-Directed Learning	Family Medicine Acting Internship	Psych Clinic	Self-Directed Learning	Self-Directed Learning		

PHASE III - Residency Preparation
Board Prep
USMLE Step I & II
Acting Internship
Complete Elective Requirements
Complete Medical Student Research Project



## Family Medicine Accelerated Program at Penn State (FM-APPS)

The 3+3 Family Medicine Accelerated Program allows [students](#) to complete medical school in three years, followed by three years of family medicine residency. Students will have the opportunity to save one year of tuition and enter practice one year earlier.

By blending a three-year program with the longitudinally integrated curriculum approach, graduates are poised to become patient-centered, empathetic physicians who are well prepared to practice family medicine in the new healthcare environment.

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James Kent, MD

## How to do medical school in three years

While most of his [peers](#) will spend their last year of medical school applying and auditioning for residency programs, James Kent gets to skip what can be a stressful process. He'll finish medical school in three years instead of four, not only saving a year of tuition, but also locking in his residency when he was accepted into the [Family Medicine Accelerated Program](#) at Penn State College of Medicine. As [part](#) of the program, Kent will stay in Hershey for six years as he finishes medical school and his family medicine residency in the same location.

James Kent

"That it takes a lot of stress out of medical school as far as worrying about where you're going to match after you graduate is appealing," Kent, the first student admitted to the accelerated program, said. "It was nice for me to know I'd be in the same place for six years."

The program, also known as a 3+3 program, is part of the College's continuing efforts to meet the healthcare needs of the nation and to provide flexibility and individualized learning for students. It launched in 2014 and allows students who have already decided to be family physicians to move forward in their education faster and at less cost.

"A medical education is extremely costly, and if we can create ways for students who are already moving along a defined course to move forward more quickly it will be less costly, and that's extremely appealing," said Dr. Terry Wolpaw, vice dean for educational affairs.

While the hope is for the program to be expanded to include other specialties, Wolpaw said the current goal is to create primary care doctors, of which the country is facing a shortage.

"We want to nurture the students' interest in primary care," said Dr. Shou Ling Leong, director of family medicine accelerated program and professor of family medicine. "We have students come into medical school wanting to develop a long-term care relationship with their patients and family medicine is a good fit. But sometimes that interest in primary care is eroded during medical school, so we want to provide an environment to show them that family medicine can be a very rewarding career."

Added Wolpaw, "Pairing students with strong role models can help them hang on to that vision and grow and develop in it at a much earlier time."

Accelerated program students participate in an innovative year-long, integrated clerkship for their clinical core training instead of traditional block clerkships that last only four to eight weeks each.

Leong said this integrated experience creates opportunities for students to foster meaningful relationships by following a panel of patients over a year.

"They get to see illnesses from the patients' perspective and see how illnesses are diagnosed, evolve and are treated," she said.

The integrated format also enables students to establish trust with patients and creates more meaningful team roles for students. They spend more time providing direct patient care independently, making learning more efficient.

"By training them this way, they're more patient-centered and more empathetic. They feel that they are contributing to the patient's care even as a student, and that's very powerful," Leong said.

Medical students typically apply in their fourth year to be matched to one of many residency programs across the country. However, accelerated program participants are accepted into the three-year Penn State Family Medicine Residency Program after three years of [medical](#) school.

"This provides a six-year linkage from undergrad to graduate medical education," Kent said. "This type of program is not simply about a shorter education, but a better education for students who want to go into primary care. It's efficient, there's early exposure to patient care and there's a steep learning curve that allows for an integrated and diverse educational process."

Because of this continuity, students may serve in the care of some patients the entire time.

"They develop a really important partnership where the student takes care of the patient but the patient becomes a teacher to the students as they're learning," Wolpaw said.

The accelerated program also helps address changes in the population. More than half of the country's adult population has chronic conditions. Pennsylvania ranks third in the nation for residents aged 65 and older, and 50 percent of its adult population has at least one chronic disease.

Leong believes that when patients have trusting, therapeutic relationships with their health care team they become more actively engaged in their health care and learn to manage their chronic illnesses.

"Our students need to know how to foster this therapeutic patient-doctor relationship, which allows them to be more effective with the care of their patients," she said.

Wolpaw said that inception of an accelerated program is not an effort to replace four-year medical curriculum or traditional programs.

"The intention is to provide flexibility and choices for a relatively small group of students who can define their interests early," she said.

The concept of an accelerated degree program is not new. It was a popular option in the 1970s and again in the 1990s. Interest renewed now with the shortage of primary care physicians and the desire to reduce school loans. While more than a third of the nation's medical schools plan to offer accelerated programs, less than one-tenth have them in place.

"Penn State is part of an early movement," Wolpaw said. "It's an old idea that is being adapted to 21st century educational programs."

The College of Medicine also incorporates the principles of patient-centered medical home into the accelerated curriculum. Patient-centered medical home is a health care model where comprehensive care is provided by a team of healthcare professionals coordinated by the primary care physician. It allows students to gain competencies in teamwork, population health, quality and safety, and coordination of care.

"We anticipate that graduates of the accelerated program will be more patient-centered, empathetic physicians who will be well prepared to practice medicine in the new health care environment," Leong said.

Kent is undaunted by the changes and finds the real challenge is the amount of information that now has to be learned in less time.

"I've come to the conclusion about medical school, it's not hard, it's just a lot," he said. "If you increase that by 33 percent a year then it becomes a lot more."

Kent believes it's a fair trade off for the security of knowing he'll continue his education in Hershey. Additionally he recognizes that the faculty who designed the program want him to thrive.

"There's safety in knowing that there are a lot more people than me invested in my success," he said.

For more information, visit <http://www.pennstatehershey.org/web/fcm/education/accelerated-program>. -Jade Kelly Solovey



[https://pennstatemedicine.org/2016/07/22/h](https://pennstatemedicine.org/2016/07/22/how-to-do-medical-school-in-three-years/)

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## Envisioning Transformations in Medical Education

Dennis Gingrich, MD, Shou Ling Leong, MD, Britta Thompson, PhD, MS, and James Kent, MSII

Medical education is being transformed nationally as a large number of colleges of medicine are currently engaged in substantial curricular changes. This period of sweeping reexamination and change is arguably the greatest since those changes accompanying the Flexner Report in 1910. Some of the ongoing and anticipated changes force us to reexamine basic premises of medical education. Two of these are (1) reducing the length of medical school education from four to three years for selected students, and (2) shifting medical school [educational](#) focus and assessment to a competency-based model. These two landmark changes will be discussed in this article. Although the traditional two-year didactic and two-year clinical educational pattern has been remarkably stable since its adoption after the Flexner Report,<sup>1</sup> three-year medical school education is not a new concept. In the 1970s, 25 percent of U.S. medical [schools](#) offered three-year programs linked to residency training.<sup>2</sup> Because of rising student debt and a renewed interest in individualized education spurred by the Carnegie Report of 2010,<sup>3</sup> there is greater interest Envisioning Transformations in Medical Education Dennis Gingrich, MD, Shou Ling Leong, MD, Britta Thompson, PhD, MS, and James Kent, MSII in the three-year model. In fact, a 2014 [survey](#) of medical school deans revealed that 35 percent of schools are considering the development of such a program.<sup>4</sup> A recent point-counterpoint article in the New England Journal of Medicine describes opposing views on accelerated three-year programs.<sup>5, 6</sup> A substantial portion of the dialogue has focused on the purpose and value of the fourth year of educational training. Arguments to continue the existing pattern range from the tradition of the past century to the need for appropriate educational training. Primary goals for the fourth year of medical school include enhancing clinical skills in preparation for residency, providing experiences that allow career exploration, and permitting student exposure to unique fields or experiences that might be difficult to coordinate in the future. The argument for maintaining these opportunities is that the fourth year is an essential part of all students' educational experience. The argument against is that one of our newly evolving educational goals is individualization of the educational experience. It follows that the choice of fourth year or equivalent, as long as requirements are met, should be the student's choice rather than an institutional mandate. Selected motivated students with a high level of clinical experience and a clear career direction might choose to forgo the traditional fourth year if other options, such as early residency entry, were available. One example of a new three-year program is at Penn State Hershey and was launched in 2015. The program links three years of accelerated medical education with transition into the three-year family medicine residency. The program's goals are to build the primary care physician workforce, to better align medical training with the healthcare needs of the nation, and to develop a competency based education that supports individualized learning. Longitudinal integrated clerkships for clinical core training, during which time students will be completing clerkships simultaneously rather than in block format, are offered. Students also follow their own panels of patients, creating opportunities to develop meaningful relationships with patients and faculty. Data suggest that these longitudinal experiences foster patient-centeredness and mitigate the erosion of student empathy.



<http://www.medchi.org/Portals/18/Files/MD%20Medicine/Maryland%20Medicine%20Vol%2017%20Issue%201.pdf?ver=2017-01-24-091409-477>

The link with residency allows integration of undergraduate and graduate medical education (GME), forming a six-year continuum across the learning environment. How are these existing and proposed changes impacting students? The following is the position of a medical student who is involved in a three-year medical school program: "From my point of view, it is important to stress that a three year program is not a 'shortcut' to finishing medical school; all the requirements for the [traditional](#) fourth year curriculum are being met. It is not merely about saving money, though that is [one](#) of the incentives offered. It is not about foregoing extra learning in favor of earlier advancement to residency. What it does allow is earlier-than-early exposure to clinical education and a 'big picture' perspective on 'why we are really here' that can get lost in the conventional two first years. This type of program is not simply about a shorter education, but a better education. I have no doubt that I am receiving training superior to that of my four-year colleagues, and early results are starting to display that. There's no wasted time, there's early exposure, and there's a steep learning curve that allows for an integrated and multimodal educational process." The past decade has also seen a paradigm shift in medical education from a focus on fixed length and variable learner outcomes to variable length and fixed outcomes, from knowledge acquisition to knowledge application, from norm-referenced to criterion referenced and from summative assessment to multiple formative assessments<sup>8</sup> and an increasing emphasis on assessment of learner processes in addition to outcomes.<sup>9</sup> With this new emphasis has come a focus on competencies, milestones, and entrustable professional activities (EPAs). Competency-based education focuses on outcomes rather than structure and process.<sup>10</sup> Using the competency-based framework, learner abilities are defined, and learners provide evidence that they possess those abilities consistently and across various situations and contexts. The shift has required medical training programs to define the expected competencies of learners and create valid assessments. Competencies for the practicing physician have been identified.<sup>11</sup> Milestones help to define guideposts to achieve the competencies.<sup>10</sup> Milestones are learner abilities that can be observed

and assessed and are criterion referenced (learners are measured against a [set](#) of standards) rather than norm-based (learners are measured compared to other learners). Milestones indicate a graduation target (or a guidepost). EPAs help to operationalize medical education outcomes that the medical profession entrusts a practitioner to perform.<sup>12</sup> Each EPA is a synthesis of several competency domains. As indicated by Olle ten Cate, MD, "entrustment decisions have a clear purpose, which is to confirm not only the ability, but also the right and the duty, for a trainee to act."<sup>13</sup> The Association of American Medical Colleges (AAMC) has recently created a set of thirteen entrustable professional activities expected of entering residents.<sup>14</sup> American residency programs have [Slide 1](#) transitioned to competency-based education, [but](#) this transition is only beginning for medical schools. The rationale for competency-based education, of course, is that it permits the identification of specific skill sets and the assessment of progress in these skill sets for every resident, and accommodates variations to achieve a more individualized educational experience. Emerging medical education reforms designed to meet the needs of society as well as our learners have led to the development of innovative accelerated programs. While only a few medical schools currently have an accelerated pathway program in place, many more are developing or considering such a program. Although accelerated programs create new opportunities, they raise serious questions and introduce challenges that must be addressed. Likewise, competency-based education is a unique development that provides a method of individualizing education, emphasizing the development of essential skill sets, and realistically assessing skill sets. It also provides integration and continuity with the method and structure of education. Innovative medical education in the United States started with the Flexner Report, more than a century ago, and continues today. The challenge of how to practice effectively in the future will require physicians with well-developed skill sets that allow them to handle complexity effectively, humanely, and with versatility. It is time to develop pathways of learning that reflect this innovation and that will provide the necessary training that our future society will require.