Re-envisioning Medical Education: Using the 3+3 Framework to Build Primary Care Capacity

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Call for Action

- Reform medical education to better align training to the healthcare needs of the nation (AAFP, IOM, AMA, ACP)

- The health of the population is best when 50% of the physicians are primary care physicians.

    - Only 30% of US physicians are in primary care

- The shortage of primary care physicians is presently 14,800 to 49,300

   - projected shortage >90,000 by 2025

Call for Action

- Students graduate from medical school with median debt of $200,000 (AAMC)

- Debt due to the high cost of medical education may discourage students from selecting a primary care career

- Medical education is too long

  - The average medical graduate is eight years older than a few decades ago

3+3 Accelerated Pathway

Penn State College of Medicine launched a 3-year accelerated pathway in December 2014

- 3 year medical school

- 3 year family medicine residency
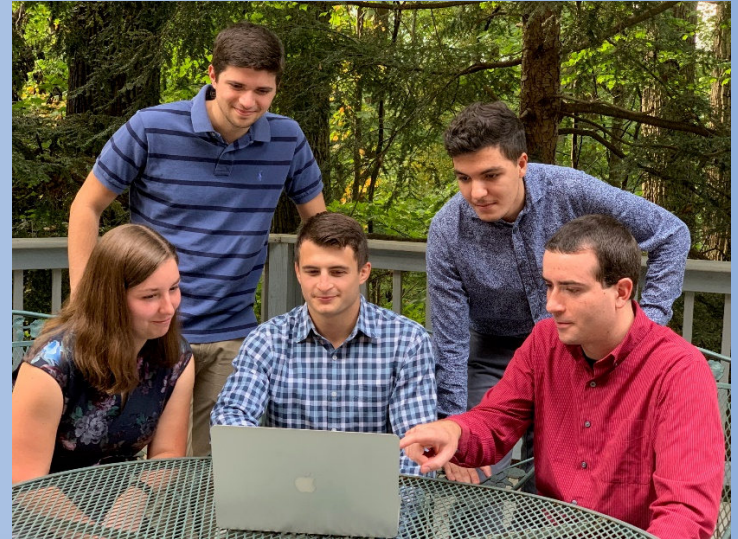
Benefits of Accelerated Program

Completing medical school in 3 years

- Save a year of tuition
- Early entry into practice
  - >$270,000 gain
- Conditional acceptance into residency
  - Save $10-20K on interviews
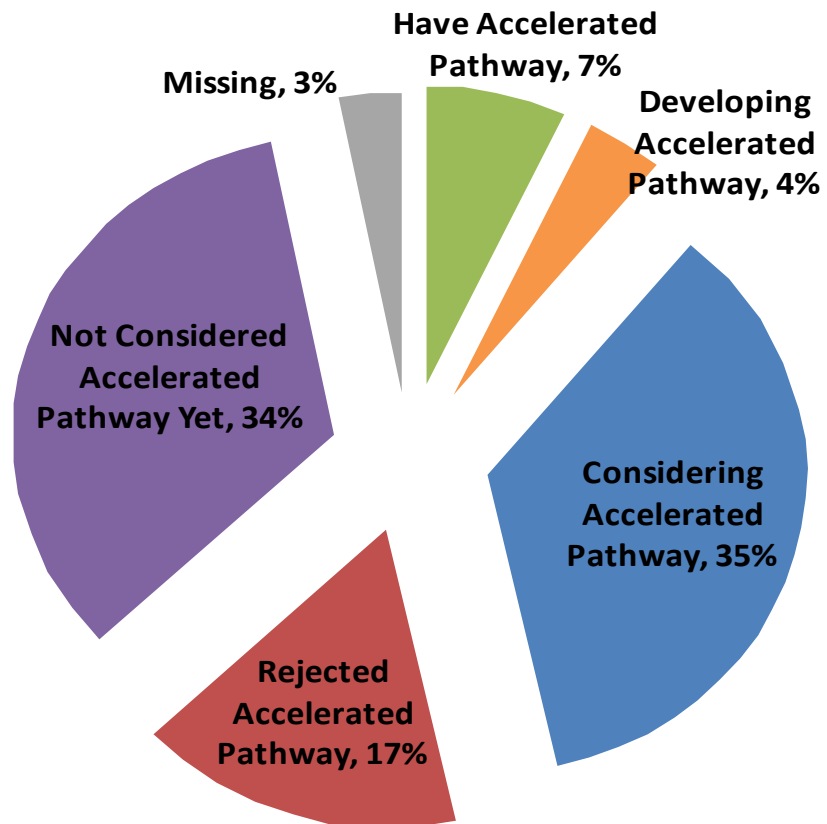- Efficient medical curriculum

Benefits of Accelerated Program

Linkage of medical school and residency

- Custom design the training for family physicians
    - Course work with FM department throughout training
    - Early clinical exposure starting in year one
    - Longitudinal Integrated Clerkship (LIC): Continuity with patients and faculty
- Address the leaky pipeline
    - Commitment to a career path from day-1 of medical school
    - Mentoring from faculty
    - Integration into the department (research, national presentations, social and holiday events)

Status of Medical Schools

Accelerated Pathway Status
Medical Schools (n=127)

- Have Accelerated Pathway, 7%
- Developing Accelerated Pathway, 4%
- Considering Accelerated Pathway, 35%
- Rejected Accelerated Pathway, 17%
- Not Considered Accelerated Pathway Yet, 34%
- Missing, 3%

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Curricular Design of FM-APPS

Customized for Family Medicine with UME-GME continuum over 6 years

- **Educational continuity**
  - ◆ Courses in the family medicine all 3 years of medical school
    - – Primary Care Preceptorship in first semester
    - – Develop own panel of patients that students would follow into residency (Medical Home, LIC)
  - ◆ More meaningful mentoring relationships with faculty
  - ◆ Increase familiarity with practice sites (lower stress with transitions)

- **Training learners to practice in the rapidly changing health care system using the Patient Centered Medical Home (PCMH)**
  - ◆ Patient centered care, motivational interviewing
  - ◆ Chronic disease management
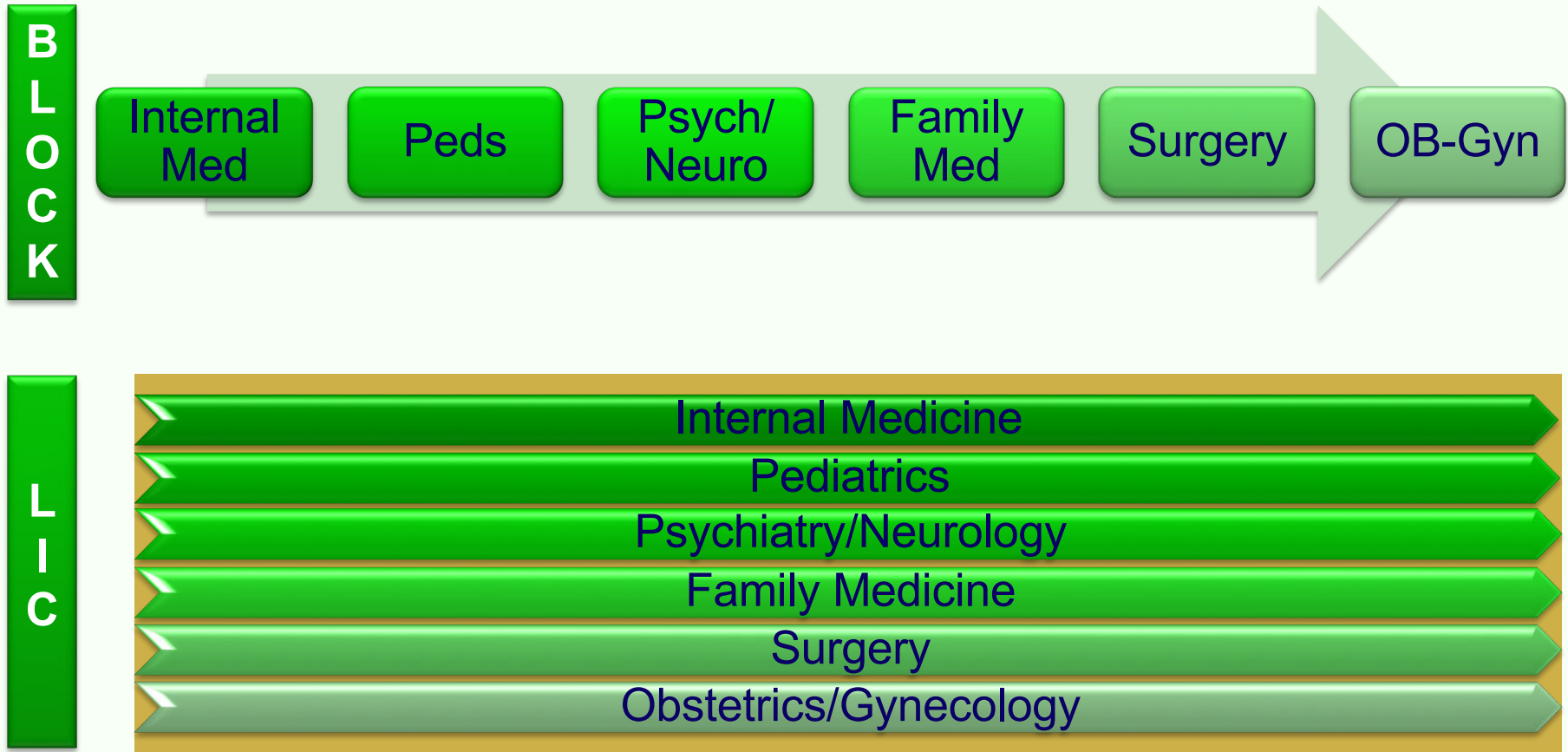 - ◆ Population health

Curricular Design of FM-APPS

- Start clinical elective in year 1

- Clerkship and electives during the summer between years 1 and 2

- USMLE board exams (step I and II) after clerkships

- Integration of learning by replacing block clerkships with Longitudinal Integrated Clerkship (LIC)

- Must meet all graduation requirements
  - 4th year electives reduced from 6 to 2

Longitudinal Integrated Clerkship (LIC)

BLOCK

| Internal Med | Peds | Psych/ Neuro | Family Med | Surgery | OB-Gyn |

LIC

- Internal Medicine
- Pediatrics
- Psychiatry/Neurology
- Family Medicine
- Surgery
- Obstetrics/Gynecology

LIC- Longitudinal Integrated Clerkships

Studies showed students in LICs are:

- More satisfied with their experience

- More patient-centered

- More active engagement in physician-like activities

- Have better clinical skills

- Equivalent or better exam performance

- Better knowledge retention

Hirsh D, Gaufberg E, Ogur F et al. Educational Outcomes of the Harvard Medical School–Cambridge Integrated Clerkship: A Way Forward for Medical Education. Acad Med 2012;87 :643–650
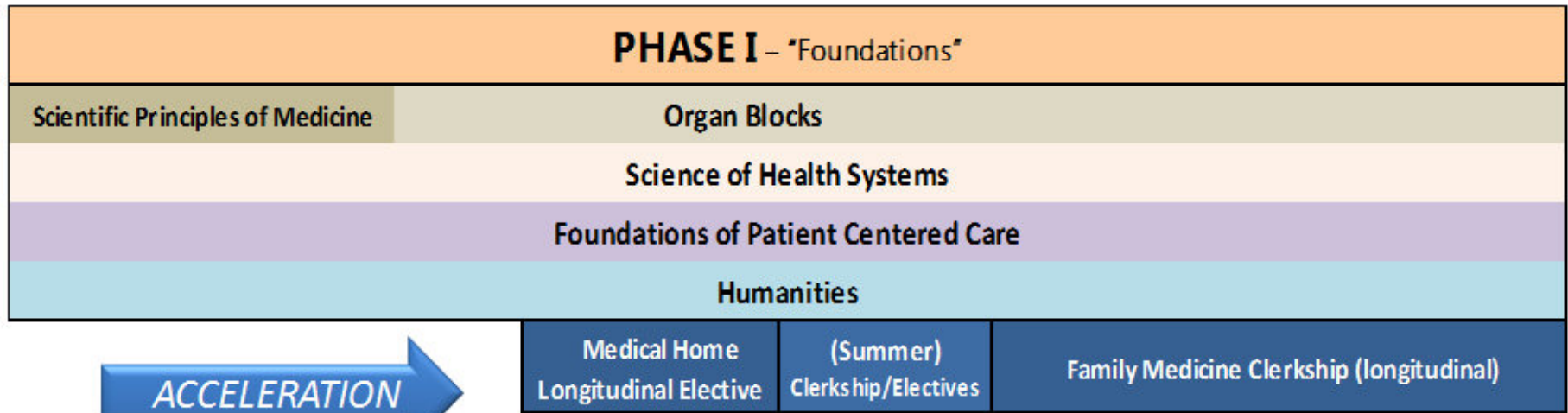
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FMAPPS CURRICULAR TEMPLATE

PHASE I – "Foundations"

Scientific Principles of Medicine	Organ Blocks

Science of Health Systems

Foundations of Patient Centered Care

Humanities

ACCELERATION

Medical Home Longitudinal Elective	(Summer) Clerkship/Electives	Family Medicine Clerkship (longitudinal)

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

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Student Characteristics

- **Ideal student for the 3+3 program**
  - Mature learner
  - Excellent academic record
  - Self-directed learner
  - Strong interest and commitment to Family Medicine and Penn State

- **Current students**
  - Strong work ethic
  - Excellent life experiences and training
  - Take initiative in their learning

Application

Two ways to enter the 3+3 Program

- At matriculation, after acceptance to Penn State COM

    - Complete a secondary application for the 3+3 accelerated program

    - Interview with the steering committee

- During the fall of the first year of medical school

- More information:

    https://med.psu.edu/md/accelerated/family-medicine

Critics' Concerns

Critics of the 3 year pathways are concerned about potential negative consequences of the shortened curriculum:

- Poor quality of education
- Graduates not prepared for residency
- Increased stress and burnout

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Research Questions

Study using the AAMC graduation questionnaire (GQ):

Compared to four-year peers, how did graduates of accelerated programs rate/respond to the following?

- Satisfaction with the quality of their education
- Readiness for residency
- Learning environment and burnout
- Debt burden and scholarships received

Study of the Graduates

A customized AAMC graduation questionnaire (GQ) was created for GQ participants

- From 9 medical schools with Accelerated programs
    - 2017 – 37 graduates
    - 2018 – 53 graduates

GROUPS:

AP Students: three-year MD graduates from the nine three-year accelerated MD programs

AP Schools: (~1300 graduates) - all graduates (accelerated and not accelerated) from the same nine schools

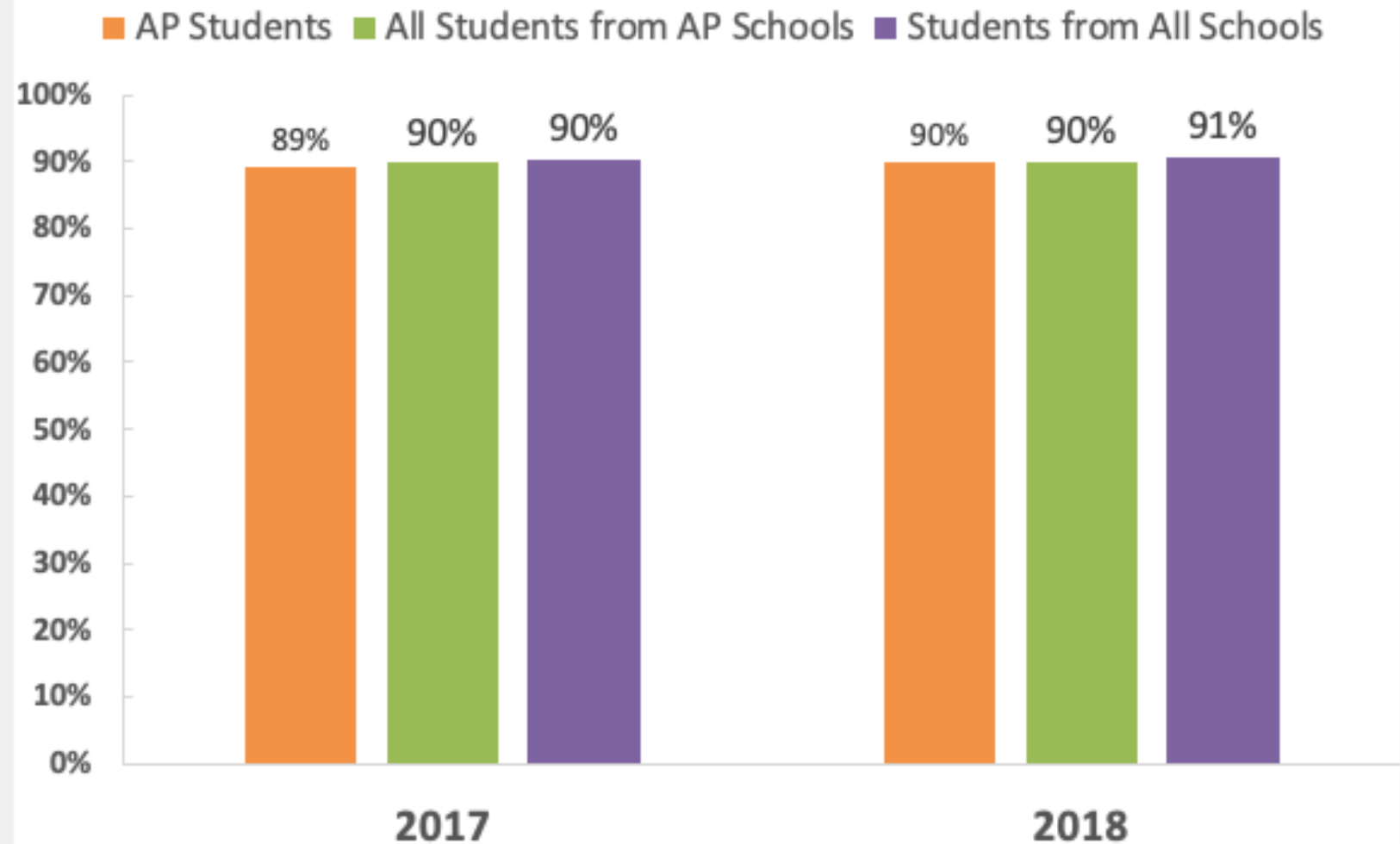**All Schools**: (~19,000) graduates from all U.S. medical schools

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Q: I am confident that I have acquired the clinical skills required to begin a residency Program. % Agree and Strongly agree

Q: **Medical School Learning Environment Survey instrument** consists of 7 items where higher scores are more positive.
Emotional Climate, combines 3 items; possible range from 0-15. Faculty Interaction, combines 4 items, possible range 0-20.
Oldenburg Burnout Inventory for Medical Students scale instrument consists of 16 items where higher scores signify higher burnout.
Exhaustion and Disengagement, includes 8 items each, possible range of 0-24.

LEARNING ENVIRONMENT & BURNOUT					
	Cohort	AP Students	All students from AP schools	Students from ALL schools	ANOVA F statistic, p value
Learning Environment - Emotional Climate	2017	10.5	9.4	9.6	F=3.12 p=.044
	2018	**10.9**	**9.8**	**9.5**	**F=7.07, p<.001**
Learning Environment- Faculty Interaction	2017	15.7	14.2	14.2	F=2.84,p=.058
	2018	**16.0**	**14.6**	**14.3**	**F=7.40, p<.001**
Burnout - Exhaustion	2017	11.3	11.1	11.1	F=.05, p=.980
	2018	11.0	10.8	11.1	F=3.51, p=.030
Burnout - Disengagement	2017	8.5	9.8	9.8	F=2.01, p=.133
	2018	9.2	9.6	9.9	F=3.88, p=.021

MEDICAL SCHOOL DEBT

	Cohort	AP Students	All students from AP schools	Students from ALL schools	Chi Square p value
No medical school debt	2017	33.3%	27.1%	27.6%	P=.745
	2018	48.4%	29.8%	28.3%	P=.012
$1 - $149,999	**2017**	**37.0%**	**11.0%**	**11.8%**	**P<.001**
	2018	35.5%	21.4%	21.1%	P=0.87
$150,000 - $400,000	2017	29.6%	62.0%	60.6%	P=.002
	2018	**16.1%**	**48.9%**	**50.6%**	**p=<.001**

Summary

- Compared to four-year MD peers, graduates from accelerated MD programs:
    - Feel as satisfied with their medical education
    - Feel as prepared for residency
    - Have equivalent rates of burnout
    - Have lower debt

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Looking Forward

- 3-year accelerated training is an emerging solution for addressing the primary care workforce shortage

- A disruptive innovation in medical education that could:

  - 1) increase the number of U.S. medical students choosing careers in primary care or areas of physician workforce need

  - 2) prepare primary care physicians more efficiently and quickly with lower student debt

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Intended Mission of the Program

Institutional Buy In
- Key Stakeholders (Dean, Faculty, LCME)
- Address Concerns

Innovate
- Workforce Development
- New Partnerships
- New Curriculum (LIC)
- Research Design

Resources
- Personnel (Leadership, Staff)
- Financial Support
- Infrastructure

Key Components
- Admission Model
- Curricular Design
- Policies for Student Promotion and Declaration
- Remediation Program (tutoring, academic advising, wellness)
- Mentoring (traditional mentor, accelerated program mentor and department mentor)

Evaluation and Mentoring
- Program Outcomes
- Achievement of Intended Mission
- Student Performance
- Graduation and Attrition Rates
- Student Wellness
- Feedback from Residency Directors

Partnership with Residency Programs
- Program Design
- Admissions
- Outreach and Retention
- Interface with GME Residents and Faculty
- GME Expectation

Consortium of Accelerated Medical Pathway Programs (CAMPP)

- Funded by Josiah Macy Jr. Foundation
- Nine founding members (now seventeen)

https://www.acceleratedmdpathways.org/

ACCELERATED PROGRAMS QUERIED

NYU School of Medicine

MUSC MEDICAL UNIVERSITY of SOUTH CAROLINA

UNIVERSITY OF LOUISVILLE. SCHOOL OF MEDICINE

UCDAVIS SCHOOL OF MEDICINE

UNC SCHOOL OF MEDICINE

TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER. Paul L. Foster School of Medicine

MERCER UNIVERSITY SCHOOL OF MEDICINE

PennState College of Medicine

MEDICAL COLLEGE OF WISCONSIN

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Table 2. Comparison of AP Students, AP Schools, and All Students: *Satisfaction with Education*

	Cohort Year	% AP Students[a]	% All Students from AP Schools[b]	% Students from All Schools[c]	Chi Square p value
Satisfied with Quality of Medical Education	2017	92.9%	89.0%	89.9%	p=.554
	2018	100.0%	90.3%	89.3%	p=.057
Agree or Agree Strongly: Basic Science Coursework Had Sufficient Illustrations of Clinical Relevance	2017	92.9%	76.8%	77.5%	p=.128
	2018	92.3%	81.0%	77.2%	p<.001
Agree or Agree Strongly: Required Clinical Experiences Integrated Basic Science Content	2017	92.5%	79.3%	80.7%	p=.149
	2018	84.6%	82.9%	80.7%	p=.166

Abbreviations: AP indicates Accelerated Pathway

[a]**AP Students:** three-year MD graduates from the nine three-year accelerated MD programs

[b]**AP Schools:** all graduates (accelerated and not accelerated) from these same nine schools

[c]**All Schools:** graduates from all U.S. medical schools

Readiness for Residency

	3-year program Students	Students from Schools w/ 3-year programs	Students from All Schools[c]	
I am confident that I have acquired the clinical skills required for residency	89%	90%	90%	p=.849
I have the fundamental understanding of common conditions and management from the major clinical disciplines	89%	92%	93%	p=.226
I have the communication skills necessary to interact with patients and health professionals	100%	98%	98%	p=.763
I have basic clinical decision making based on evidence	97%	94%	94%	p=.791
I have a fundamental understanding of the social sciences issues in medicine	96%	92%	94%	p=.098
I understand the ethical and professional values that expected in medicine	97%	97%	98%	p=.043
I believe I am adequately prepared to care for patients from diverse backgrounds	100%	95%	95%	p=.381