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Graduate Medical Education: Ready for Reform An Analysis of the Current State of Change in Pediatric Residencies

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Graduate Medical Education: Ready for Reform

An Analysis of the Current State of Change in Pediatric Residencies

Authored by Mallory Benson, Honors Scholar Class of 2017

A thesis written in part of the fulfillments of the requirements for the DePauw Honors Scholar program.

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Table of Contents

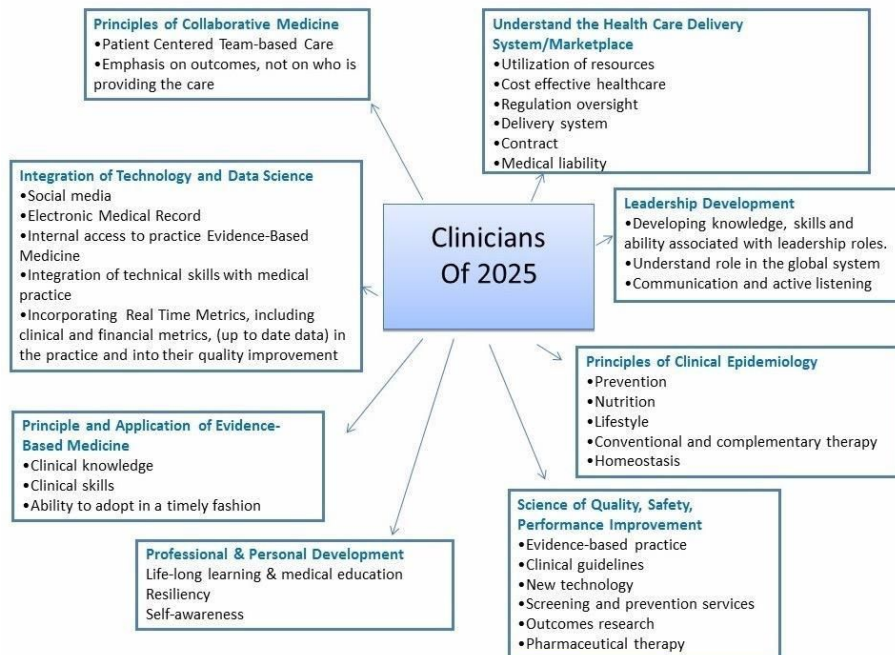
- 1. Acknowledgments.....2
- 2. Table of Contents.....3
- 3. Introduction.....4
- 4. The University of Utah Department of Pediatrics.....15
 - a. Updating the Curriculum.....16
 - b. Changes to Resident Rounding.....20
 - c. Team Based Learning.....22
- 5. The Future of GME Programs.....24
 - a. Vanderbilt University Medical Center.....25
 - b. University of Texas MD Anderson Cancer Center.....28
 - c. University of California - San Francisco School of Medicine.....30
 - d. University of Washington - WWAMI Regional Medical Education Program.....35
 - e. Partners HealthCare.....38
 - f. University of Michigan Medical School.....40
 - g. Patient Reported Outcomes.....43
- 6. Discussion and Conclusion.....45
- 7. Works Cited.....50

Introduction

Graduate Medical Education (GME) is an all-encompassing term that, broadly defined, envelops the training programs for aspiring physicians, beginning after medical school graduation and continuing through their residency until they are ready for independent practice. Due to a variety of regulatory and societal demands, GME programs now aim to produce more patient centered physicians, as well as to reorganize the way future physicians are trained (Poss, Brad, personal interview, 2016).

GME is meant to holistically train future physicians to meet societal needs. Multiple levels of changes are occurring that will eventually allow for the production and implementation of these “Clinicians of 2025” as illustrated in Figure 1 (Poss, Brad, unknown source, 2016).

Figure 1. Clinicians of 2025



This transition in medical education is not limited to GME but includes the whole

spectrum. Changes to the MCAT, the Medical College Admission Test, will include additional questions pertaining to sociology and psychology. The MCAT originally focused only on the hard sciences, and it was expected that the applicant had knowledge about said subjects equitable to that of an undergraduate textbook. Changes to Undergraduate Medical Education (UME) include more self-pacing of courses and exams (more individualized learning), and changes to GME residencies specifically, include more integration of teamwork and bedside manner (Skochelak, et al., 2017).

Before looking forward to the future however, one must look retrospectively at where medical education has come from and why there is a need for reform. Published in 1910, The Flexner Report outlines the then current state of medical education in the country. The report sought to address questions concerning the disparities among the quality of physicians being produced by the current medical education system (Raszka, et al., 2011). Henry S. Pritchett, President of The Carnegie Foundation at the time, wrote of all current universities, “It required but the briefest examination to show that amongst the thousand institutions in English-speaking North America which bore the name college or university, there was little unity of purpose or of standards,” (Flexner, 1910). Pritchett elaborates,

“Under these conditions the trustees felt themselves compelled to begin a critical study of the work of the college and of the university in different parts of this wide area, and to commend to colleges and universities the adoption of such standards as would intelligently relate the college to the secondary school and to the university,” (Flexner, 1910).

After their review, The Carnegie Foundation for the Advancement of Teaching

commissioned a commonplace teacher, Abraham Flexner, to investigate every medical school in the country and collect opinions and recommendations on how to remedy the physician training tragedy that was currently transpiring. Flexner concluded that the source of the problem was that there was no concrete path followed to become a physician. He cited schools such as Johns Hopkins, Harvard, and the University of Pennsylvania as just a few of the top tier schools that all had different entrance requirements (Flexner, 1910). Teaching hospitals would borrow time from practicing physicians, many of whom did a lackadaisical job, to train residents. The character of physician depended greatly on the quality of teaching provided by the practicing physician. Flexner recommended a pre-determined pathway that was to be taken by all aspiring physicians, as illustrated in Figure 2 below (Maini, 2015).

Figure 2: The Path to Doctorhood



Flexner’s recommendations and what was eventually adopted throughout the United States was as follows: Students interested in medicine should take courses such as biology, chemistry, physics, the hard sciences, as well as anatomy and physiology at their university. The student should apply, prior to graduation with high academic achievement and lofty MCAT

scores, using a universal application to the medical schools of their choice. Once accepted, the student will study for four years, abiding by a rigid curriculum. These four years will be followed by a residency, each varying in length depending on the specialty. A fellowship or further specialization program may be pursued after the residency as an option (Maini, 2015).

What this has produced for over a century is autonomous, competitive, intellectual physicians. Physicians who treat the symptoms present, but often fail to connect personally with their patients. What Flexner's medical education system fails to provide and teach new physicians is empathy. This lack of empathy went unnoticed for years, being cast off as a personality quirk.

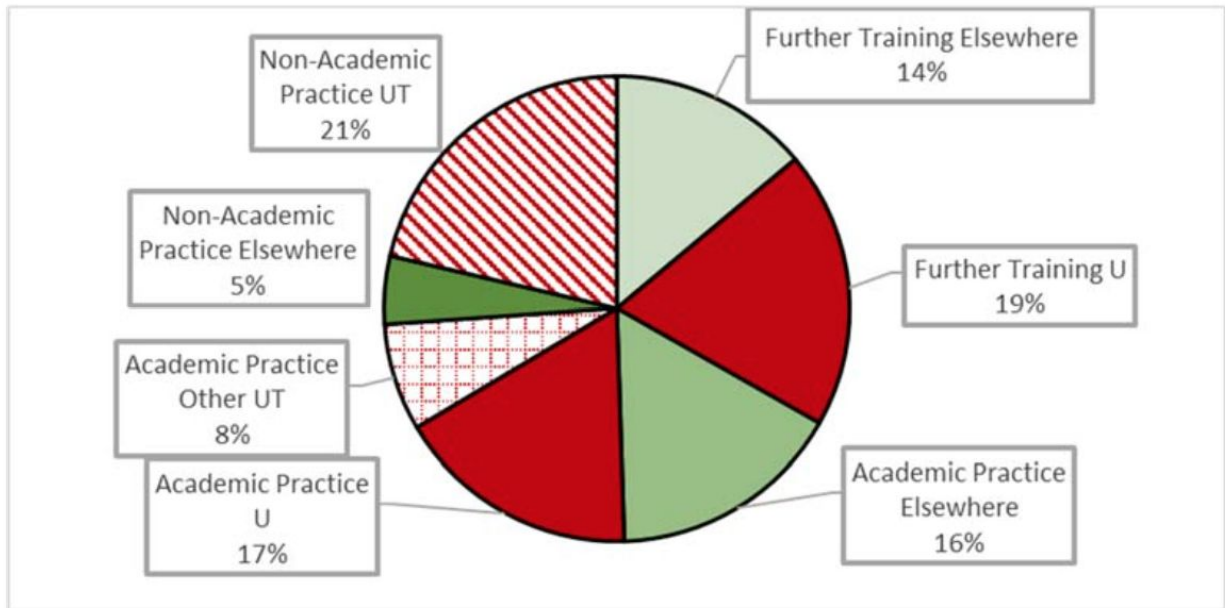
During the 21st century however, we are seeing a different emphasis. In an article titled, "Calls for Reform of Medical Education by the Carnegie Foundation for the Advancement of Teaching: 1910 and 2010", David M. Irby, et al., states of the current medical education system, "Medical training is inflexible, overly long, and not learner-centered. Clinical education for both students and residents excessively emphasizes mastery of facts, inpatient clinical experience, teaching by residents, supervision by clinical faculty who have less and less time to teach, and hospitals with marginal capacity or willingness to support the teaching mission," (Irby, 2010).

In addition to the above, more and more, research performed at academic medical centers (AMCs) is focusing on where the dollars are going; and consequently, we see some of the best physicians leaning towards those initiatives and not necessarily pursuing specialties that serve the population need. This leaves several areas of the country, especially the rural communities, with under-trained physicians and second tier students. "Learners lack a holistic view of patient

experience and... the broader civic and advocacy roles of physicians” (Irby, 2010), Irby and colleagues state. Patients are no longer feeling fully satisfied with their health care experience for a variety of reasons, such as their doctors are too busy, too textbook in approach, or too impersonal. Patients are beginning to turn to other sources to fulfill their medical needs (Irby, 2010).

According to the AAMC (American Association of Medical Colleges), “[an] aging and growing population, exponential growth in medical discovery, and increasing reliance on technology are demanding rapid and simultaneous changes in medical education and health care delivery,” (Optimizing Graduate Medical Education: A Five-Year Road Map for America’s Medical Schools, Teaching Hospitals and Health Systems, AAMC, 2015). The above hurdles create additional stress and burdens on clinical teams, requiring that they have greater patience and change management skills. Also, patients are coming to appointments better informed having researched their symptoms on unreliable websites such as WebMD, and expect to be seen almost immediately while likewise wanting physicians to provide them with longer appointments. This can be quite frustrating for current clinicians because the United States has a shortage of physicians, and services are in high demand. This is especially problematic in Utah, where physician retention has been a struggle. For example, the distribution of physicians in 2015 after residency at the University of Utah School of Medicine show only 65% stay in Utah, as illustrated in Figure 3 (Data for IHC-UUHS GME Partnership, GME Office and UMEC 2016).

Figure 3: Program Retention



Moving clockwise from “Further Training Elsewhere”, “Academic Practice Elsewhere”, and “Non-Academic Practice Elsewhere”, 35% of physicians trained at the University of Utah are leaving the state. This lack of retention and noticeable shortage of physicians in Utah is further supported with evidence from The Utah Medical Education Council’s 2016 report titled, “Utah’s Physician Workforce, 2016: A Study on the Supply and Distribution of Physicians in Utah”. The report states “Of the total 9,990 physicians holding a Utah license, 6,035 report to be practicing medicine in Utah. This means that only 60.4% of physicians licensed in Utah are actually providing care in the state. This is a drop in percent...from 67.1% in 2010,” (Ruttinger, 2016). Additionally, the report claims, “...48% of graduates from Utah’s only (current) medical school who graduated between 1970 and 2016 report a Utah address,” (Ruttinger, 2016). Utah cannot afford to continue training in medical education and not retain these physician trainees.

This obstacle becomes more pronounced when one looks at some of Utah’s most recent

demographic data. According to the Gardner Policy Institute, Utah is one of the fastest growing states from natural growth, such as births and migration into the state, and has one of the youngest populations. The report states, “Approximately one-third of Utah’s growth from 1990 to 2010 occurred because of net in-migration” with “someone mov[ing] into the state every 64 minutes,” (Utah Demographics, Kem C. Gardner Policy Institute, 2016).

One solution, to both retain physicians and improve the quality of medical education is to invest more heavily in GME. Among the many AMCs across the country, the University of Utah stands out as a forerunner in medical education for its students and residents, consistently ranking among the top 50 medical schools in the country (University of Utah - Medical Ranking 2015, med-colleges.com). In 2015, “Business Insider magazine released their list of the 25 best medical schools in the nation -- and the University Of Utah School Of Medicine was ranked at number 14,” (Business Insider Ranks University of Utah Medical School Among the 25 Best, health care.utah.edu, 2015). Such stature among the medical education community calls for maintaining cutting edge training for students and residents. To that end, Utah is one of four AMCs participating in a collaboration intended to gather data on the success of a new model of GME. The other universities include the University of California - San Francisco, the University of Minnesota, and the University of Colorado. The collaboration is titled EPAC, Pediatric Education Across the Continuum, and will send data from all four universities’ new GME pediatric residency programs to the AAMC (Murray, et al., EPAC poster).

All four universities involved in EPAC are aiming to “test the feasibility of advancing medical students and residents based on competency,” (Overview, Overview - U of U School of Medicine, 2017). The University of Utah Department of Pediatrics has chosen to take a two

toned approach to their involvement in EPAC: “EPAC-Explore (first year medical students) and EPAC-Focus (second year medical students),” (Overview, Overview - U of U School of Medicine, 2017). As explained on the Pediatrics Categorical Pediatric Program website, “The curriculum, consisting of seminars, role plays, pediatric clinics, and other learning activities, is designed to provide students with an in-depth, longitudinal exposure to pediatrics,” (Overview, Overview - U of U School of Medicine, 2017). These experiences provided to the student are being titled “Entrustable Professional Activities (EPAs),” (Murray, et al., EPAC poster) and it is hoped that these EPAs will help to improve the relationship between the physicians and the patients, as well as increase perceived mentorship from residency supervisors (Murray, et al., EPAC poster).

Within this collaborative, the University of Utah Department of Pediatrics has set its sights on establishing a curriculum for pediatric residents that allows for self-pacing and more integrated work among different health care providers, such as nurses and physician assistants. They are currently implementing multiple initiatives to try and achieve this goal. The first initiative is to develop and establish a more community-based training track for pediatric residents. Utah is seeing exceptional growth in many of its rural counties such as Wasatch and Uintah counties with 17.8% and 13.1% growth for 2015, respectively (Utah Demographics, Kem C. Gardner Policy Institute, 2016). This, combined with the knowledge that University of Utah Health is one of the largest health care providers in the intermountain west, makes fertile grounds for establishing resident rotations in the community. Resident provided health care is more economical and gives residents an excellent training opportunity. The University of Utah Department of Pediatrics aims to allow residents to choose certain rotations that would be out of

the inpatient hospital setting and based in rural communities. These residents would be a part of clinical teams comprised of multiple health care professions. This would count as part of their residency training, provide residents with real workplace experience, and give them an opportunity to explore additional specialties that they may not experience in a traditional residency training program (Primary Care Residency - Community Track and Pediatric Residency as an Example (DRAFT), 2017).

The second initiative is similar to the first, but has already been implemented at programs such as National Children's in Washington, D.C. and is currently growing (Community Health Track, 2017). In a study titled "Creating Flexibility in Pediatric Resident Education" in the journal of Pediatrics, Hobson, et al. detail the issues found with the pediatric residency at the University of Utah, describe the results, and outline potential solutions. To preface, nothing was systematically wrong with the way the residency program was being managed. It had just become inefficient and less effective as GME evolved, and as residents became more proactive in requesting what they wanted from their experience. Pediatric residents started asking for opportunities outside of the classroom that would allow them to perhaps further specialize in pediatrics or become child advocates. After much research, the authors found that some pediatric education programs had additional tracks, like the community track mentioned above, but that even those were not a perfect solution.

"Some programs have relied on tracks to provide alternate educational opportunities for their residents, but such programs may actually decrease flexibility by limiting choices for participating residents because they are unable to select electives outside of their chosen track. In addition, some tracks are matched positions, which limit the number of

residents that may participate,” (Hobson et al., 2011).

The University of Utah Department of Pediatrics decided if they were going to put a new program in place, it would have to do more. The University of Utah pediatric residency program is currently “divided into 13 4-week rotations,” (Hobson et al., 2011) with residents required to attend “2 half days of continuity clinic,” (Hobson et al., 2011) during most rotations. It was these half days that Hobson, et al. decided to look at and modify.

The methods of this research study and the author’s solution to the problem was to allow second and third year residents to apply for an alternative half day program. These alternative program applications were mostly related to child advocacy projects or specialization research projects. The outcome was that more residents than were originally planned were admitted to participate. This allowed for early collection of results prior to expanding the program (Hobson et al., 2011).

The university’s new program garnered incredible interest, and many of these second and third year residents went on to win awards, present at conferences, and enter fellowships for sub-specialization. According to the study, “71% of the residents who participated in the alternative half day program entered fellowship on graduation, compared with 17% of residents in the conventional half day program,” (Hobson et al., 2011). This increase in fellowships and participation in the health care community demonstrates that individualization for the student works, and if thoughtfully developed, programs like GME will most certainly improve the quality of the physicians that AMCs are producing.

This thesis will report on the current state of GME within the University of Utah’s pediatric residency program. The reader will also be informed of the popularity of said GME

programs by being privy to data collected surveys of current pediatric residents, graduated pediatric residents, and co-workers of residents, both past and present.

The University of Utah Department of Pediatrics

The Department of Pediatrics at the University of Utah School of Medicine consists of 300 full-time faculty, 87 residents, and 41 fellows. Departmental graduate medical education programs include the following residency programs: categorical pediatric, internal medicine/pediatric, pediatric/child psychiatry/adult psychiatry (“triple board”), and child neurology. In addition, the department offers fellowship training in cardiology, child abuse, critical care, emergency medicine, gastroenterology, genetics, hematology/oncology, infectious diseases, neonatology, and neurology. All residency and fellowship programs are accredited by the Accreditation Council for Graduate Medical Education (ACGME) (Poss, Brad, personal interview, 2017). The University of Utah School of Medicine and Department of Pediatrics, being a top tier medical school, with top tier residencies, had, for its lifetime, followed the Flexner model of medical education.

Students were expected to complete their undergraduate coursework with academic excellence and to continue to perform academically throughout their graduate education with limited emphasis on patient communications and bedside manner. Always looking to make improvements and lead the pack, the university joined the University of California - San Francisco, the University of Colorado - Boulder, and the University of Minnesota in a collaboration aimed at reimagining GME, and specifically aimed at the pediatric residencies. The reasoning behind choosing pediatrics is unknown, yet even outside of the collaborative, it is the specialty of choice for GME reform. In this section, the University of Utah Department of Pediatrics residency program is examined in depth, both in its past form and in its current curriculum.

Updating the Curriculum

The Department of Pediatrics offers a three-year, comprehensive pediatric residency accredited by ACGME (Overview, Pediatric Residency, 2017). The residency's website describes the program as

“offer[ing] ample exposure to both common and rare pediatric disorders in conjunction with incredible clinical teaching in both inpatient and outpatient settings, an innovative and personalized residency curriculum, and numerous research, academic, or advocacy opportunities,” (Overview, Pediatric Residency, 2017).

Their website also states that residents will leave the program as highly qualified and extremely competent pediatricians (Overview, Pediatric Residency, 2017). Prior to joining the collaborative, the University of Utah's pediatric residency program was very similar to other national programs. The main two areas of possible change identified by Dr. Brad Poss, pediatrician, Associate Dean for Graduate Medical Education and Chief Medical Education Officer, were 1. All residents were required to have similar experiences and 2. The federal funding available for GME currently is tied into major hospitals system rotations (Poss, Brad, personal interview, 2017). These main drawbacks to current resident education disallow for personalization of experiences and education and they impede residency programs from placing residents in smaller communities, where they would be immersed in a more applicable practice situation. It is thought, as well, that placing residents in smaller communities may aid in physician retention (Poss, Brad, personal interview, 2017).

Currently, the University of Utah Department of Pediatrics is implementing multiple changes to its residency program while gathering information on how restructuring GME would

affect the quality of physicians being produced, patient satisfaction, and physician retention. The University of Utah Department of Pediatrics has determined multiple routes to achieving this goal; all of which are highlighted in this section. They include a newer community track model, changes in rotations and curriculum, and resident feedback on a new “family centered rounds” initiative.

The community track is a special track being designed only for students who match into this track. The track would allow residents to participate in “four (4-week) rotations each year in off-site (outside of U of U/Primary Children’s) settings,” (Primary Care Residency - Community Track and Pediatric Residency as an Example (DRAFT), 2017). Figure 4 illustrates a sample rotation block schedule (Primary Care Residency - Community Track and Pediatric Residency as an Example (DRAFT), 2017).

Figure 4: Sample Pediatric Rotation Schedule

	PL-1	PL-2	PL-3	Total	
Inpatient	Inpatient Units (general Pediatrics/Subspecialty)	4-5	1.5	3	8.5-9.5
	Well Baby Nursery	1	1	0-1	2-3
	PICU	0-1	1	1	2-3
	NICU	1	1	1	3
	Complex Inpatient Subspecialty (Oncology, Cardiology, ID, Renal, GI)	1.5	2.5	0	4
Outpatient	Emergency Department	1	1	1	3
	Behavior & Developmental Pediatrics	0	1	0	1
	Ambulatory Adolescent	1	0	0	1
	Advocacy	0.5	0	0	0.5
	Urgent Care	0	0	1	1
	Ambulatory Subspecialty (Neurology, Endocrine, Pulmonary, Psychiatry, Renal, Cardiology, Child Abuse)	1	0.5	2	3.5
	Elective	1	3.5	4	8.5
	Longitudinal Outpatient Experience (Continuity Clinic)	Two 1/2 days per week during outpatient rotations. One 1/2 days per week during inpatient rotations	Optional 2nd 1/2 day can be used for advocacy or research	Optional 2nd 1/2 day can be used for advocacy or research	
	Teaching Resident (supervisory inpatient rotations)	0	3.5	4	7.5

The off-site clinics could be in any of the following areas: Montana, Utah, Arizona, and Alaska to name a few. Once admitted to the track, residents can substitute the “Urgent Care, Well-Baby Nursery, Wards, and any Elective,” (Primary Care Residency - Community Track and Pediatric Residency as an Example (DRAFT), 2017) rotation for an off-site rotation location. The rotation subject would remain the same. The community track also mentions that, “The resident’s Continuity Clinic experience would also be done at the off-site setting,”¹ (Primary Care Residency - Community Track and Pediatric Residency as an Example (DRAFT), 2017). As seen in Figure 4, residents are asked to dedicate a certain amount of time to their continuity clinic. The University of Utah Department of Pediatrics comments on their website,

“Residents have two half-day LOE² clinics per week, a unique aspect of our program.

This provides extensive experience in ambulatory pediatrics and flexible opportunities for advocacy, research, and QI projects. With the collaboration of faculty mentors, residents can apply to use one of the ½ days in their PGY-2 and PGY-3 years to pursue research, QI, or advocacy projects,” (Overview, University of Utah, 2017).

The option to apply dedicated LOE time to other projects such as advocacy and research is something unique to the University of Utah Department of Pediatrics. It should also be noted that the University of Utah would be the first Department of Pediatrics to establish a true community/rural track for its residents (Poss, Brad, personal interview, 2017).

In tandem with the changing residency programs, the University of Utah Department of Pediatrics has also changed some aspects of its curriculum. As described on their website, the

¹A continuity clinic is a clinical setting where residents are given the opportunity to develop the skills needed to create long term, preventative health plans with patients and families. (Continuity Clinics, 2011)

²LOE is an acronym for longitudinal outpatient experience.

curriculum “provides a comprehensive education that prepares residents equally well for primary care or subspecialty careers,” (Overview, University of Utah, 2017). As can be seen in Figure 4, part of this is accomplished through the diversity of the resident’s schedules over the course of the three years. Residents are assigned to several rotations and given the option to explore others. This increased diversity allows residents to engage in what excites them about their specialty and further personalizes their education (Poss, Brad, personal interview, 2017).

Moreover, the Department of Pediatrics has created multiple “Pediatric Pathways” (Overview, University of Utah, 2017) to help define the resident’s experience and help them get the most out their residency. “Pediatric Pathways” (Overview, University of Utah, 2017) serve as templates to help the resident customize their residency. Options include General Pediatrics Ambulatory, General Pediatrics Hospital Medicine, Subspecialty/Research, and Global/Rural/Underserved Health. Descriptions of these pathways can be seen below in Figure 5 taken from the University of Utah’s Pediatrics Categorical Pediatric program website (Overview, Overview - U of U School of Medicine, 2017).

Figure 5: Pediatric Pathways

General Pediatrics Ambulatory	General Pediatrics Hospital Medicine	Subspecialty/ Research	Global/Rural/ Underserved Health
Rotations and electives that provide skills for careers in ambulatory pediatrics in academic or private settings	Rotations and electives that provide skills for careers as hospitalists	Rotations and electives that prepare you for fellowship training	Rotations and electives that enable you to gains skills in serving the underserved

Also it is stated on the website that, “Because we recognize that career goals may change as you move through residency training, our flexible pathways and templates enable residents to select

electives from any of the pathways as they create their curricula,” (Overview, University of Utah, 2017). These electives range from one-two week mini electives to four week long elective courses. Mini electives include selections such as lactation, diabetes camp, and genetics, while full elective courses include selections such as dermatology, cardiac intensive care, and neurosurgery (Electives, 2017). A full list of electives can be found at http://medicine.utah.edu/pediatrics/pedsresidency/residency_program/categorical-program/curriculum/electives.php. These electives, along with the required rotations, are all fit into a 13-week rotation schedule (Electives, 2017).

In addition to the updated curriculum, the University of Utah Department of Pediatrics has begun implementing a new way of conducting clinical learning. Residents are now immersed in an “educational environment [that] promotes collegiality and teaches residents how to function as members of interdisciplinary teams,” (Overview, Pediatric Residency, 2017). Residents are being placed in complete teams for their rotations. These teams can include nurses, physician assistants, medical assistants, and many others. Teamwork is being tagged as one of the up and coming traits needed to be defined as a quality physician. Teamwork, much like bedside manner, and the idea of treating one’s fellow health care workers as equals rather than subordinates is also instrumental in increasing patient satisfaction scores.

Changes to Resident Rounding

The University of Utah Department of Pediatrics has tested the teamwork based approach, using the mechanism of “Family Centered Rounds”. Primary Children’s Hospital was incredibly forthcoming with what they changed about pediatric resident’s rounds and the feedback they received from the initial running of the initiative. The full list of changes and the

subsequent feedback is covered next.

- **What they changed:** Rounds were to take place solely in the patient room. Prior to entering the room, the team would discuss the case and then enter. This was meant to increase efficiency in patient visits and avoid any miscommunication between treatment team members.
- **Feedback received:** Residents and team members liked the idea of getting to spend more time in the rooms, with patients and their families, and less time exiting and re-entering trying to get all the information together. Some, however, felt that the option to round outside the room; that is, only provide the information, but not physically enter the room, should exist. It is important to keep in mind that all hospital staff members have multiple jobs. It is unrealistic to expect them to dedicate more time to round on all patients with residents.
- **What they changed:** Nurses were asked to round with each team and enter every patient room. Nurses, more so than any other member of a treatment team, are more likely to be recognized by the patient, making them feel more at ease.
- **Feedback received:** The residents reported positive feelings about rounding with the nurses. No feedback was gathered from the nurses during this trial period.
- **What they changed:** What is conveyed to the patient is always a topic of conversation. It is heavily debated whether patients should be made aware of all details concerning their case, especially when said details could cause unwanted or unnecessary stress to the individual.
- **Feedback received:** Teams reported difficulty with determining what was “pertinent”

and what was not. If team members had not studied the case at hand prior to rounding, teams reported extreme difficulty in keeping the conversation concise.

- **What they changed:** To ensure no miscommunications transpire between the treatment team and the patient and their family, Primary Children's staff began asking round teams to repeat the treatment plans back once instructions were given.
- **Feedback received:** The feedback from the teams was that the question was difficult to ask and the interaction ended up being more awkward than productive. It was "difficult for some people to get on board with," as reported by Primary Children's Hospital representative/staff.
- **What they changed:** Primary Children's leadership reported that they asked the teams to use a whiteboard to write down the treatment plan.
- **Feedback received:** This was not done before and so far, no negative side effects have been experienced.

Team Based Learning

Between the updated curriculum and changes to resident rounding, one can see how education for the residents in the University of Utah Department of Pediatrics is moving towards more team based learning. University of Utah Health is also experimenting with Integrated Practice Units (IPUs) and related research to further examine a more integrated approach to care and education. Simply, IPUs are treatment teams comprised of multiple doctors, nurses, surgeons, and others that are dedicated to a single patient condition. Early integration of team based learning provides another opportunity for residents to practice these important skills. Familiarity with the workplace environment could also help aid in physician retention. Team

based health care is a model for the future (Benson, 2017).

The Future of GME Programs

It is imperative in reviewing GME programs to look forward. We have examined where GME has come from, and where it is now, but where is it going? Are other AMCs, separate from those involved in EPAC, expending similar amounts of resources and brainstorming to improve their hospital and health care system as well? This section will look to answer the former questions through an extensive review of Josiah Macy Jr. Foundation's "Innovations in Graduate Medical Education Aligning Residency Training with Changing Societal Needs," (Larson, Josiah Macy Jr. Foundation, 2016), which reports on six separate GME conferences held throughout 2016.

In November 2016, the Josiah Macy Jr. Foundation published a 124 page report on six different regional conferences pertaining to GME that occurred throughout the year. Those six health systems were Vanderbilt University Medical Center, University of Texas MD Anderson Cancer Center, University of California San Francisco School of Medicine, University of Washington - WWAMI Regional Medical Education Program, Partners HealthCare, and the University of Michigan Medical School. But first, a little background on the Josiah Macy Jr. Foundation.

The Josiah Macy Jr. Foundation was established more than 80 years ago by Kate Macy Ladd, the daughter of Josiah Macy Jr.. Macy Jr. was "an eighth generation descendant of Thomas Macy, who emigrated from England in 1635," (History, 2015). The foundation's intention was to always support the education for health care providers. More recently this has taken form in focusing grant money on GME and how the education of physicians needs to change to meet the changing needs of society (Larson, Josiah Macy Jr. Foundation, 2016).

Current President, George E. Thibault, emphasizes the foundation's goals in his welcoming words on the website, "Being a doctor, or a nurse, or another health professional is a different job than it was in past decades, and it will change even more in the decades ahead. So health professional education must continue to change to produce the successful practitioners and leaders for tomorrow," (From the President, 2015). As previously mentioned, the foundation has begun implementing a variety of mechanisms including the previously mentioned GME centered conferences. What makes these summits so spectacular is that they are bringing together multiple perspectives and health care professions to discuss one common goal. No longer is it solely the physician's job to provide quality health care. President Thibault reiterates, "[health care providers] will do this armed with accelerating advances in science and technology and strengthened by being a part of a team of health professionals. It is an extraordinary opportunity to bring together humanism and science," (From the President, 2015). And it is with these ideals of "serv[ing] the public's needs and improv[ing] the health of the public," (From the President, 2015) the Josiah Macy Jr. Foundation sponsored these regional conferences and published their findings, which are summarized following.

Vanderbilt University Medical Center

The Vanderbilt University Medical Center (VUMC) held their GME conference, titled "GME as an instrument of change to improve the health of systems, populations, and society", on February 1, 2016 (Larson, Josiah Macy Jr. Foundation, 2016). The Vanderbilt Conference decided to focus on the three main levels of health care: the system, the population, and society, and discuss within these levels how GME reform can progress medical education and prove beneficial. To accomplish these feats, the VUMC planning committee determined that,

“Transforming GME to meet society’s needs requires a team approach,” (Larson, Josiah Macy Jr. Foundation, 2016). The VUMC states that present “were representatives from the ACGME, the Centers for Disease Control and Prevention, the Josiah Macy Jr. Foundation, the U.S. Department of Health and Human Services, HRSA’s Bureau of Health Workforce, and the Veterans Health Administration’s Office of Academic Affiliations. ... also present were program directors, residents, nursing leaders, department chairs, chief medical officers, and chief strategy officers from a variety of [AMC’s],” (Larson, Josiah Macy Jr. Foundation, 2016). The diversity of participants exemplifies the importance of a collaboration, a key component of GME’s evolution.

Involvement from all health care professionals is crucial to the efficiency and efficacy of a health care system. As put in the foundation’s report,

“...the evening enabled conference participants to meet each other and begin building relationships. This was important because the broad diversity of attendees, from within and outside the GME world...it brought together groups that previously have not been directly involved in conversations about GME [and] ...assembled an incredibly diverse collection of people, all with a stake in how we train physicians to talk about GME and how we can innovate to drive system improvement,” (Larson, Josiah Macy Jr. Foundation, 2016).

Knowing the perspectives from different aspects of a system, a population, or a society ensures that all possible opinions, problems, and solutions are heard. It was decided early on that the group focus would be knowing and constantly recognizing “...the importance of using GME as an instrument of change to improve the health care system and the health of the population,”

(Larson, Josiah Macy Jr. Foundation, 2016). It was with this thesis statement in mind that the VUMC conference attendees moved forward with addressing the growing needs of GME (Larson, Josiah Macy Jr. Foundation, 2016).

The VUMC conference participants identified improving patient satisfaction as primary focus area. Patient satisfaction has become an increasingly important criterion for federal and state funding, as well as individual physician quality scores. The public wants to know that their physician is going to take the time to listen to their concerns, answer their questions, and make the patient feel more like a friend or ally and less like a number. The VUMC report states, “local health systems must develop new ways of providing physicians with data about their practice patterns that encourage them to...improve patient outcomes,” (Larson, Josiah Macy Jr. Foundation, 2016). But, how?

In theory, through change and innovation. In practice; however, this can be challenging. The “...difficulty of innovation, often caused by our own inability to break through constraints,” (Larson, Josiah Macy Jr. Foundation, 2016) is cited as one reason this change has yet to take place. Constraints can range from resident mental health to the lack of bedside manner to a failure to find common interests between the patient and physician. It should be noted that the University of Utah School of Medicine has already begun piloting programs geared towards assessing patient perception of resident care. These pilot programs are located in the Family Medicine program, as well as Ophthalmology, Dermatology, and Obstetrics and Gynecology outpatient clinics. There is a plan in place to implement a pilot program in Pediatrics later this year (Poss, Brad, personal interview, 2017).

Lastly, the VUMC conference reports their discussion on AMC’s and their role in helping

navigate the coming changes in GME. The report highlights, "...the importance of academic medical centers in defining community engagement..." (Larson, Josiah Macy Jr. Foundation, 2016). One can continue this statement in many ways. AMCs can, and are, increasing community outreach. The University of Utah Department of Pediatrics has continually been on the forefront of this change in GME programming, noting specifically their involvement in EPAC and their preliminary changes to the training curriculum.

University of Texas MD Anderson Cancer Center

The University of Texas MD Anderson Cancer Center hosted their conference on February 17, 2016 for the Southwestern region of the United States. Three main themes were established for this conference, but only one, the "training and retention of rural practitioners," (Larson, Josiah Macy Jr. Foundation, 2016) is of interest to this literature review. Texas, much like Utah, is dealing with a shortage of physicians, as well as problems with physician retention.

Declining physician retention rates means an increase in the number of physicians needed at major hospitals and especially in more heavily populated cities. This increase means a smaller pool of physicians available for rural areas. Utah, just as much as the Southwest, is experiencing this very issue. Physician retention is rapidly declining, with Pediatrics 10-year average retention rate hitting at 62.7% (Data for IHC-UUHS GME Partnership, 2016). A solution for this growing problem was reported in the foundation's report. The report authors state, "We need to examine how to best involve local communities in bringing GME into the community and identify enough rural communities that might be interested in and benefit from serving as IPE hubs³," (Larson, Josiah Macy Jr. Foundation, 2016).

³ IPE is an acronym for Interprofessional Education.

If rural populations can be convinced that training residents within the community is valuable, and residents can be convinced that rural health care is a priority in terms of physician need, then perhaps we may see an increase in small town doctors. The Texas conference lists, “identify[ing] and develop[ing] mechanisms to help support these physicians in their transition from training to practice so they stay in the community long enough to grow roots and remain in these communities permanently,” (Larson, Josiah Macy Jr. Foundation, 2016) as the most fruitful solution.

Small town communities sometimes perceive that “outsiders” - people who did not grow up in said community - should be avoided to maintain the culture of the community as it stands. Dr. Darrell Kirch, President of the AAMC, was quoted in a recent press release, ““A diverse and culturally competent workforce will enable us to provide the care all Americans need and deserve,”” (New Research Reaffirms Physician Shortage, AAMC, 2017). By understanding the community in which they will be practicing, GME residents can avoid becoming cultural and social outcasts.

This exclusionary behavior can make it difficult for new physicians to move in and establish a patient base. Combined with “...increasing costs, flat or declining fee schedules, [and] limited capital,” (Larson, Josiah Macy Jr. Foundation, 2016) make for a poor working environment, thus resulting in a shortage of physicians, especially in rural areas. Conversations surrounding these shortages are important because these shortages are not in Texas alone. They are nationwide, and especially evident in the intermountain west. As mentioned earlier, Utah is seeing a significant percentage of its physicians trained in state, leave as soon as their four years of medical school is complete. Some solutions to this growing issue, as reported in the

University of Texas MD Anderson Cancer Center's highlight in the foundation's report, include "...social support for new graduates who are just starting their families..." and "...involv[ing] local communities," (Larson, Josiah Macy Jr. Foundation, 2016). Other solutions offered by the AAMC include opening more residency positions, increasing class sizes and acceptance rates for undergraduate medical schools, and reforming the way GME is conducted. The AAMC press release calls for more team-based learning. (New Research Reaffirms Physician Shortage, AAMC, 2017). It is with these suggested solutions that AMCs charge ahead in helping to shape the evolution of GME.

University of California - San Francisco School of Medicine

The third conference in the Josiah Macy Jr. Foundation report is the conference titled, "Building a better workforce for better care", and was hosted by the University of California, San Francisco School of Medicine (UCSF) on March 30, 2016 (Larson, Josiah Macy Jr. Foundation, 2016). The main goal of the conference was to "...improve the health of the public by improving GME," (Larson, Josiah Macy Jr. Foundation, 2016). This will be a challenge, but one that UCSF is ready to tackle. Dr. Thibault of the Macy Foundation encouraged conference attendees to bring up the tough subjects and ask the hard questions. He is quoted, "GME is an opportunity to improve health care quality and delivery and to address disparities, and we should be training the next generation of physicians to lead the change," (Larson, Josiah Macy Jr. Foundation, 2016). In other words, this is not the responsibility of any single entity.

Full participation of not only physicians, but of nurses, administrators, hospital lawyers, and even AMC presidents is required if any program wants to run a successful UME and GME program. Including multiple health care professions in the planning and implementing of new

GME programs is a great way to reduce communication errors and improve physician retention rates across all specialties, pediatrics included. Mr. Edward Salsberg at the UCSF conference stated,

“...there is an opportunity for better aligning GME with health care needs and priorities, including expanding resident training opportunities in community-based settings; in team-based skills and collaboration; in caring for underserved populations; and in specialties, such as... pediatrics,” (Larson, Josiah Macy Jr. Foundation, 2016).

Dr. Thibault also “suggested that the conference demonstrated that GME must focus on all the competencies needed for the 21st century, but with greater individualization, more diverse training settings, and more focus on IPE and teamwork,” (Larson, Josiah Macy Jr. Foundation, 2016). It was the hope of this conference that those attending who worked at universities farther behind in their GME renovations would leave with some useful ideas on how to close the gap so that medical education can continue to shape itself around the student, their learning needs, and the patient. Dr. Thibault also mentioned that “...GME required a greater focus on personal wellness and a humane learning environment to ensure that GME produces more humane and satisfied physicians,” (Larson, Josiah Macy Jr. Foundation, 2016). It can be extrapolated that more satisfied physicians will then treat their patients more humanely and patient satisfaction scores will increase.

The topic of training schedules and mental health for interns, residents, and recent graduates of undergraduate medical schools is not a new one. In her book, “Beyond these Walls”, Linda Lederman includes a chapter written by Krista Hirschmann titled “Blood, Vomit, and Communication, The Days and Nights of an Intern on Call” (Lederman, 2008). In this

chapter, Hirschmann describes her 24 hours following two separate interns. She begins by presenting an overview of the problems with the current resident schedules. She states,

“However, despite these dynamic changes, physicians-in-training... continue to be initiated in much the same tradition as were their predecessors - by being overworked, overstressed, and underappreciated,” (Lederman, 2008).

This environment, one that does not foster learning or ideal self-health, can be detrimental to residents. Hirschmann continues to point out the flaws in not promoting self-care of residents.

She writes,

“...the long sleepless hours faced by those on call, that is, those having to stay in the hospital overnight and through the next day resulting in 36-hour shifts, it is argued to be unhealthy for both the residents and their patients. Consequently, mistakes resulting from both fatigue and lack of supervision are inevitable and potentially deadly,” (Lederman, 2008).

Hirschmann cites the case of Libby Zion as an example of the tragic consequences that can occur when residents are overworked and under supervised⁴. Resident health is growing problem and continued efforts to address this need to be encouraged.

One such continued effort is research being conducted and collected by the AAMC. In a recently published letter, AAMC President, Dr. Darrell Kirch, examines his time as a resident and admits,

“It saddens me to think about how we tolerated corrosive and disrespectful interactions,

⁴ Libby Zion was an 18-year old woman who passed away in New York as a result of negligent care from her physician. It was later determined that the physician was a resident suffering from an extreme lack of sleep due to his demanding schedule as well as inadequate supervision. It was this case that prompted the passing of a law outlining resident work hour requirements in New York and helped lead to the passing of similar laws nationally.

assuming they were natural for a profession that is stressful and an educational process that is rigorous. Too often, the line between demanding excellence and demeaning individuals was crossed, and no one said a word,” (Creating Learning Environments That Promote Physician Resilience, AAMC, 2017).

Dr. Kirch is one of many physicians just now coming to the realization that perhaps the current training environment for residents is not the ideal environment. Dr. Kirch further elaborates on this thought,

“In 2015... the Mayo Clinic published an update to a previous study, finding that the number of physicians reporting symptoms of burnout had risen to 54%... Many of these problems start in medical school, graduate school, and residency. ... Clearly, we must do a better job of giving students and residents, as well as graduate students and researchers, strategies to strengthen their resilience,” (Creating Learning Environments That Promote Physician Resilience, AAMC, 2017).

Research has begun at the AAMC; studies have already been published and there is no sign of a decline in interest. The AAMC continues to believe that “a strong system of medical education across the continuum remains central to [their] overarching mission to improve the health of all,” (Creating Learning Environments That Promote Physician Resilience, AAMC, 2017). With this, one thing stands certain; when patients’ lives become at risk, due to an unhealthy resident lifestyle, change in the system is needed immediately. It is hoped that improved GME, the Macy Foundation conferences, and collaborative groups such as EPAC will promote such changes.

Additionally, The UCSF conference included attendee discussion on the needs of GME

and ultimately concluded that multiple innovations could be presented and tested. The report further states, “These presentations included discussions of new community-based GME consortium to sponsor and fund residency training as well as a novel six-year pathway from medical school to professional practice,” (Larson, Josiah Macy Jr. Foundation, 2016). Of the 15 GME innovation abstracts that were documented in the report, number 14 stood out as particularly significant to this study. UCSF presented a “...new method for the assessment of resident competence in patient handoffs utilizing an entrustable professional activity framework and the I-PASS structured clinical observation (I-PASSco),” (Larson, Josiah Macy Jr. Foundation, 2016). This system is used to determine a resident’s relative safety score when passing a patient to another member of the treatment team. The safety score has proven a tremendous aid in differentiating between residents. The report qualifies the difference between a good resident and a poor resident as a good resident being able “to make decisions about competency and entrustment,” (Larson, Josiah Macy Jr. Foundation, 2016). The report expands on its description of I-PASSco by saying,

“...I-PASSco scores have the potential to serve as a measure of both an important education and patient safety outcome... the I-PASSco serves as an example of how to link educational outcomes to patient outcomes and safety,” (Larson, Josiah Macy Jr. Foundation, 2016).

This method is one that is not widespread, but should be reported to all AMCs as soon as conclusive data regarding its efficacy is established (Larson, Josiah Macy Jr. Foundation, 2016).

The University of Utah School of Medicine, however, has already begun to implement some of these proposed improvements, and as of April 2017, they are being recognized for their

efforts. EIN News recently reported that the University of Utah Department of Pediatrics is “among the recipients of the 2016 John M. Eisenberg Award for Innovation in Patient Safety and Quality for their work as part of a patient safety research group,” (Cowley, 2017). As mentioned earlier, I-PASSco is a new initiative for patient safety during physician pass off. The University of Utah Department of Pediatrics was part of the original study group (Cowley, 2017). Since its introduction, I-PASSco has spread to more than 50 hospitals across the country and reduced harmful medical errors by 30%, while reporting that there was no significant increase in handoff time. Previous handoff time was 2.4 minutes. It is now 2.5 minutes (Cowley, 2017).

The more universities that experiment with new ideas and models, the quicker change will occur and influence the culture of medical education. If all AMCs do not progress at similar rates, then a situation may arise that is parallel to the problems that have risen from Flexner’s medical education system; disparities in the training and quality of physician may become more apparent should only some AMCs chose to advance their GME programs and embrace patient centered care (Larson, Josiah Macy Jr. Foundation, 2016).

University of Washington School of Medicine

The University of Washington held the fourth GME conference in the Macy Foundation series from March 30-April 1, 2016. The conference was titled, “WWAMI GME Summit” (Larson, Josiah Macy Jr. Foundation, 2016). For reference, WWAMI stands for the five schools associated with the University of Washington’s “regional medical education program: Washington, Wyoming, Alaska, Montana, and Idaho,” (Larson, Josiah Macy Jr. Foundation, 2016). Similar to the conference held in Texas, this summit met to discuss GME, rural areas, and how to structure GME to aid in meeting the needs of underserved populations (Larson, Josiah

Macy Jr. Foundation, 2016).

This is a hefty task, as mentioned before, but one that the country seems ready to undertake. C. Scott Smith, a medical doctor, professor, and consultant for the VA Office of Academic Affiliations (Larson, Josiah Macy Jr. Foundation, 2016), states, “that IPE done well takes hard work and time, but the rewards are highly functioning teams that provide excellent care,” (Larson, Josiah Macy Jr. Foundation, 2016). To accomplish this feat, the Washington conference ended with six themes. This research will explore the last three as follows: “...4) GME should be outward-looking, to serve the community where the residents are training; 5) GME should be competency-based and should match what the community needs to what the residents are learning; and 6) training in interprofessional teams is important,” (Larson, Josiah Macy Jr. Foundation, 2016). These are all relatable to the current issues in Utah health care. It should be noted that many of these ideas are currently being implemented both in Utah and around the country.

Main presentations from the conference were picked out based on their content and their relatability to pediatric residencies. Dr. Matthew Hirschfeld of the Alaska Native Medical Center presented a track developed for pediatric residents working at Seattle Children’s Hospital. The track allows residents to spend “four months a year (for three years) working in community-based settings in Alaska. ... sites include... a high-risk Native population in a remote region,” (Larson, Josiah Macy Jr. Foundation, 2016). This strategy is like the community track being set up by the University of Utah Department of Pediatrics. Residents are exposed to high risk situations early on, thus, the development of skills crucial to teamwork is necessary. Residents need to be trained to safely advocate for themselves and for their patients. The

foundation report ends its entry on the WWAMI conference by stating,

“The [various] pathway[s] [have] generated successful community projects for underserved pediatric patients that provide residents with training opportunities in eastern Washington and graduating physicians with a strong background in advocacy for their patients,” (Larson, Josiah Macy Jr. Foundation, 2016).

Advocacy for patients is just one of many skills necessary for a complete improvement of patient quality of care.

Dr. Brian Johnston, the Chief of Pediatrics at Harborview Medical Center, a medical center associated with the University of Washington, presented on “the Resident Education and Advocacy in Child Health (REACH) pathway for pediatric residents,” (Larson, Josiah Macy Jr. Foundation, 2016). This program allows residents to engage in their workplace communities while broadening their scope of their patients’ lives. This program urges “residents to look beyond the walls of the clinic and hospital to understand child health in a community context,” (Larson, Josiah Macy Jr. Foundation, 2016). Throughout the two-month program, residents are asked to “explore fundamental questions related to child health through a mini-public health curriculum [and] community-based projects... that engages them either in community health locally or in global health in Kenya,” (Larson, Josiah Macy Jr. Foundation, 2016). The University of Utah Department of Pediatrics offers opportunities to residents to participate in global pediatric health, as well (Overview, Overview, Global health, 2017). These opportunities span the globe (Overview, Overview, Global health, 2017) and offer residents unique experiences such as “Self-Directed Learning”, “Global Health Journal Clubs”, and “Travel Scholarships” (Curriculum, 2017). The University of Utah Department of Pediatrics has begun to

offer pediatric residents more than just elective courses in addition to their GME coursework, to encourage education about more than just textbook medicine.

Partners HealthCare

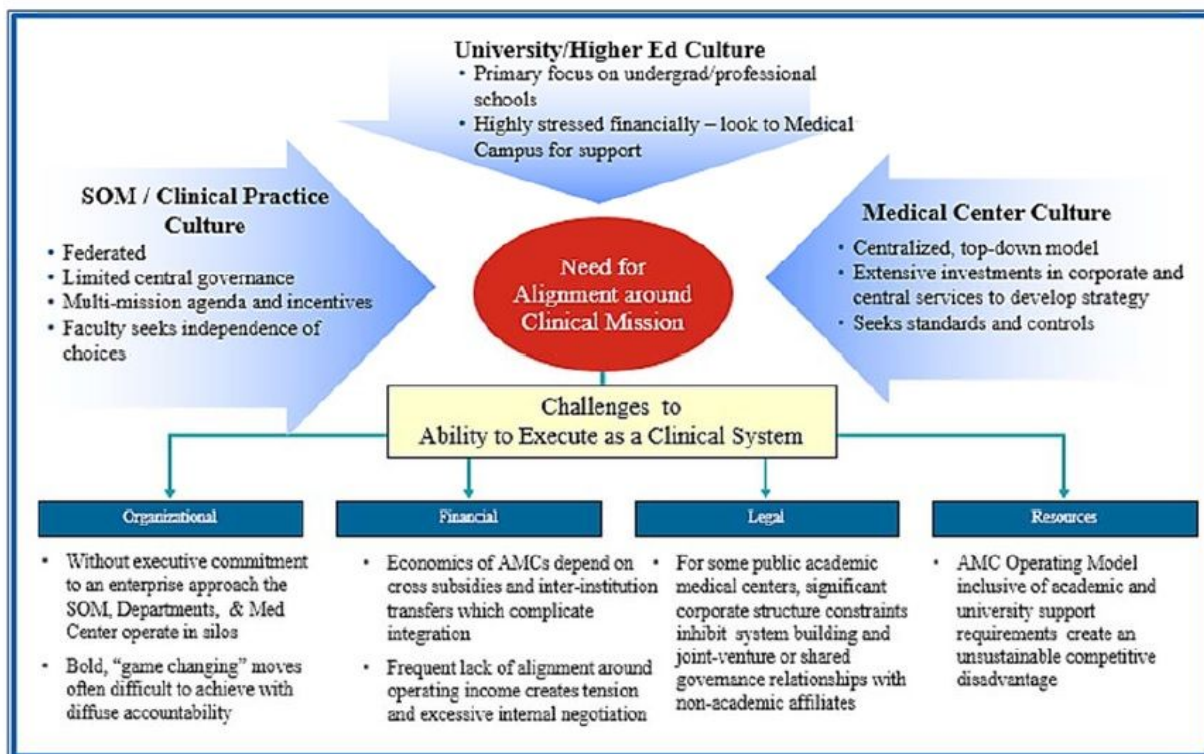
The fifth conference, held by Partners HealthCare on May 6, 2016 and titled, “Graduate medical education innovation conference” (Larson, Josiah Macy Jr. Foundation, 2016), concluded with a slightly more realistic outcome. In discussing GME and how to implement the various new methods and tracks, the conference attendees were brave enough to point out one game-changing factor: the institutions hiring the physicians.

In theory, producing more patient centered physicians seems like a reasonable goal. In practice, however, it must be considered that hospitals still need to deliver care, whether it is patient centered or not. The report concurs with this, “...the tension between “service” and education arose as an issue: resident and fellow activities continue to be heavily influenced by institutional care delivery needs that often do not align well with learning needs or curricular priorities,” (Larson, Josiah Macy Jr. Foundation, 2016). There is a disconnect between hospital management and resident training programs that is not allowing the training to produce what the hospitals need because the hospitals cannot dedicate the time to develop long term plans that account for physician turnover from Flexner method physicians to GME trained physicians.

To further support this disconnect, the report cites, “...insufficient priority placed on education; a lack of communication across specialties; and the absence of a mechanism to endorse new educational technologies to stimulate broad implementation,” (Larson, Josiah Macy Jr. Foundation, 2016). Not only are the hospitals not communicating with the training programs, but the old school mentality that one specialty is better than the other continues to persist. Dr.

Edward Clark, Chair of Pediatrics at University of Utah Health, often asks health care leadership/physicians “how many of you have studied basic science (hands go up), how many of you have studied clinical science (hands go up), how many of you have studied system science (very few hands if any)” (Benson, Dayle, personal interview, 2017). This illustrates the immense need for education not only among new and future physicians, but among the existing workforce as well. With reform only occurring in a portion of the bigger picture, the Partners HealthCare conference brings up a good point in thinking that the system may need to be adjusted prior to adjusting the quality of physician that is produced. Figure 6 illustrates the above issue, and also provides a more complete look at AMCs and the challenges they face as a whole university system, not just a health care system (AAMC, 2014).

Figure 6: Barriers to Systemic Changes in Academic Medical Centers



University of Michigan Medical School

The last conference held in the Josiah Macy Jr. Foundation series was hosted by the University of Michigan Medical School on May 23-24, 2016. It was titled, “Accountable graduate medical education: linking GME to high-value care,” (Larson, Josiah Macy Jr. Foundation, 2016). The attendees at this regional conference were looking at GME and the many components involved and relating those to the real world. What were the current issues? Is there one topic that should be addressed first? Four such topics were given to different lunch groups as points of discussion. The University of Michigan then reported the findings (Larson, Josiah Macy Jr. Foundation, 2016).

The two lunchtime topics that are of most interest are topics one and two; “...using EPIC to measure resident-related performance; 2) resident wellness,” (Larson, Josiah Macy Jr. Foundation, 2016), respectively. EPIC is an electronic medical record system (EMR) that could perhaps be more effectively utilized as a tool. EPIC could potentially track resident orders, provide a history of resident diagnoses, and keep a record of which members of the treatment team have been communicating with the patient and when. These would all be helpful for reviewing each resident and knowing what exactly each has done and when they did it. The lunchtime group reported that “[They] all agreed on the importance of incorporating IT analysts into the teams and sharing with them the importance of resident data,” (Larson, Josiah Macy Jr. Foundation, 2016). This is just one additional example of multiple health care and administrative professionals coming together for the greater good of medical education and, consequently, of patient care.

The second topic, “Resident Wellness,” (Larson, Josiah Macy Jr. Foundation, 2016), is

related to a previous topic conference, and is mentioned here only to reiterate its importance in the GME system. Tired and overworked residents make for unpleasant patient visits and can be damaging to the resident's health. Lack of sleep combined with stress is a recipe for a lowered immune system, slowed metabolic rate, and potentially harmful bacterial growths such as ulcers. The foundation report echoes this, "Participants agreed that residents struggle with wellness, that self-care is not often embraced or supported within the training environment, and the faculty members generally do not model good wellness behavior," (Larson, Josiah Macy Jr. Foundation, 2016). The report also mentions that this include "both physical and mental health," (Larson, Josiah Macy Jr. Foundation, 2016). As mentioned earlier, and again in Lederman's book, a healthy environment for residents is necessary to create a culture of care that enables residents to learn effectively. The report concludes this topic by looking forward, "Self-care curricula are now being defined and implemented at some institutions," (Larson, Josiah Macy Jr. Foundation, 2016). Well trained and well rested residents will lead to more patient physicians, and thus hopefully, improved patient satisfaction scores (see "Patient Reported Outcomes" at the end of this section).

The University of Michigan continues with its conference summary by mentioning a new "pilot program that focuses on the "handoff" of milestones from medical school... to program directors," (Larson, Josiah Macy Jr. Foundation, 2016). This is being used in certain residencies, pediatrics included, to evaluate students after they have been matched to their residency program. Continuing, the Macy Jr. Foundation reports comments on the University of Michigan's "'Transition to Pediatric Internship' elective," (Larson, Josiah Macy Jr. Foundation, 2016). Within the internship, students are observed and an individualized learning plan is created

for them. The University of Utah is doing something similar, and in the preliminary data, it appears to be incredibly effective. Resident attitudes are being shown to have improved, and patient satisfaction scores when reported after being treated by a resident have improved. These improved attitudes and scores can be attributed, in part, to the increased satisfaction that residents are experiencing in their residencies because of new additions to the program, such as individualized learning programs. Learning is something unique to the individual and simply because one may need time to cover the material does not mean they should be penalized. If the students are more comfortable with their learning environment, they will grow in their education to be more confident physicians.

Similarly, Dr. Barbara Brandt of the University of Minnesota presented on “academic tourism” (Larson, Josiah Macy Jr. Foundation, 2016) and

“the need to move beyond [it], where learners simply rotate among different disciplines or domains but don’t get the chance to witness or participate longitudinally in collaborative practice... The need to elevate the competencies of collaborative practice and ‘teammanship’ was noted,” (Larson, Josiah Macy Jr. Foundation, 2016).

Residents should be allowed to have a choice in what rotations they complete and what they accomplish within those rotations. As example, if one is in a pediatrics residency, then they should not necessarily choose just pediatric rotations, but should be given options so that their rotations are tailored to their interests. EPAC is just one of these collaborative efforts, one that the University of Utah Department of Pediatrics is proud to be a part of, to increase resident voice in their education and “...establish a competency-based, as opposed to time-based, curriculum,” (Larson, Josiah Macy Jr. Foundation, 2016). This curriculum includes working in

teams out in the field and could take notes on a similar program at the University of Cincinnati, where “[they organize] residents into integrated practice teams... [and] meet weekly to reflect on their performance and what they would like to improve,” (Larson, Josiah Macy Jr. Foundation, 2016). The integrated teams allow residents to understand early on what it will be like to work in an actual hospital setting.

Patient Reported Outcomes

Another unique training opportunity for residents and patients at University of Utah Health is learning and sharing patient reported outcomes data with the clinical teams. University of Utah Health is leading the pack for innovation with regards to transparency and improving patient satisfaction using data driven metrics. The School of Medicine recently became the first health care system to publish patient reported physician scores online, and other AMCs are following suit. The idea behind publishing the scores was that if physicians could see how their patients rated their care along physical, social, and behavioral domains, then physicians could provide more personalized, patient centered care (Benson, Dayle, personal interview, 2017).

Due to its early success and potential, the collection of patient reported outcomes at University of Utah Health will be expanded to include the residencies. Patients of residents in the outpatient clinics of Family Medicine, Ophthalmology, Dermatology, and Obstetrics and Gynecology are now being surveyed on their experiences with their attending residents. A six question survey asking for ratings and comments across consistent domains is sent to each patient and the results are collected, synthesized, and given to the residency program director. The program director reviews each set of comments and shares the scores and commentary to the resident. Dr. Ryan Murphy, a hospitalist and clinical instructor for the University of Utah School

of Medicine, stated in a phone interview that one of the main benefits to these surveys is that they have become integral in early identification of resident performance (Murphy, Ryan, personal interview, 2017). University of Utah Health heavily values patient centered care and this early identification is crucial in ensuring that these physicians are upholding the values held by the rest of the University, and correcting any negative resident behavior before it becomes habitual (Murphy, Ryan, personal interview, 2017).

However, patients are not the only individuals being surveyed. Beginning in December 2016, residents were also surveyed as to resident attitudes towards patient centered care and the training involved. There is no conclusive data yet, but if early trends are telling, resident attitudes will improve as patient reported satisfaction scores improve. Soon, University of Utah Health will roll out both patient and resident surveys to all residency programs with outpatient clinics (Murphy, Ryan, personal interview, 2017).

Discussion and Conclusion

GME needs revision. The current system is not working; it has led to physician disinterest, physician shortages, and it has increased tension between physicians and patients. Recommendations from a manageable study group, such as EPAC, is a great place to start discussions around change. The multiple universities involved in EPAC are exceptional examples because their success shows that changes in GME can be applied to different regions and patient populations across the country.

However, the ‘graduate’ nature of GME should not be the only facet considered. There are untapped and unrecognized benefits to exposing students to health care at an earlier age. High school programs and programs very similar to ROTC could potentially help students expedite their coursework and field work, allowing them to enter and explore the health care field much sooner. Programs such as these may also reduce the cost of training. This reduction of cost could serve as an incentive to join the health care field for those who are deterred by the high cost of training.

The proposed changes to GME will most certainly attract new physician applicants at a time when we need them most. Policies such as No Child Left Behind and the Common Core have made receiving a quality education difficult. Too often students are asked to regurgitate information rather than retain it. Too often students are reduced to numbers, such as test scores, passing rates, and GPAs. Reclaiming individualized education plans, by reintroducing choice in electives and new educational paths will energize future generations and encourage them to pursue health care careers.

For over 100 years, medical education has undergone very little change. Academic

Medical Centers across the country were training physicians to be textbook intelligent and ignoring the need for a more holistic approach to patients. A serious need to reform in GME was necessary; University of Utah Health recognized this and is taking appropriate actions by updating the curriculum and leading with innovation via new educational tracks, such as the rural community track available to certain qualified residents. It is hoped that this new, personalized education approach prepares physicians for the rapidly changing health care environment. This is all to ensure that the next wave of physicians trainees not only treat each patient, but do so while creating an exceptional and personalized patient experience.

The University of Utah Department of Pediatrics is planning for the future in regards to GME. Their residency program is a unique in that it allows a set number of physicians to participate in a rural community training track. The Department of Pediatrics will begin by allowing about 10% of the admitted pediatric residents into this track, with hopes that they can double that number soon (Poss, Brad, personal interview, 2017).

The Department of Pediatrics has also revised their curriculum to include a more personalized education for the resident. This system allows residents to move through the necessary curriculum at a pace more attuned to the resident. This teaching format allows the resident to learn the material thoroughly, enjoy what they are learning, and choose where they wish to focus. This varies from the traditional curriculum where all residents are expected to learn at the same pace, and curriculums demanded that residents spend most of their training in inpatient environments (Poss, Brad, personal interview, 2017). Keeping residents in the main hospital, and impeding them from community practice reduces the physician's opportunity to create ties to the community. This not only leads to a decrease in resident satisfaction, but also

contributes to the emigration of physicians once their residency is complete (Poss, Brad, personal interview, 2107).

Primary Children's Hospital, the teaching children's hospital associated with University of Utah Health, is similarly contributing to changing GME. They have recently modified how residents round. Previously, residents rounded independently, and now they round with the treatment team, which include nurses and other advanced practitioners. Primary Children's Hospital has found this change to be incredibly effective. Residents are happier not having to repeat discussions with the treatment team and the patient, while the treatment teams are much happier not having to repeat the treatment plan to the family. Through the reformation of pediatric resident GME, University of Utah Health aims to improve physician retention and patient satisfaction scores.

In addition to University of Utah Health's current GME efforts, previous efforts by University of Utah Health to improve patient care and increase patient reported scores should be addressed (Benson, 2017). Two years ago, University of Utah Health implemented a new model of patient care called an Integrated Practice Unit (IPU). The IPU was "[intended] to measure the impact of engaging clinical teams more directly in managing HF patient costs and outcomes by aligning care team governance, clinical goals, and financial incentives," (Benson, 2017). It is the "care team governance" (Benson, 2017) that is pertinent. These IPU's are analogous to training residents with a more team based approach.

In her dissertation, Dr. Benson compares University of Utah Health's IPU model to its parent model. Not all of Dr. Benson's points will be reviewed, but a few are pertinent to this research. Dr. Benson notes that "Providers view themselves as part of a common organizational

unit (IPU),” (Benson, 2017) and that besides primary providers, “surgeons, nurses, midlevel, administration, and decision support staff meet regularly to discuss patient care...” (Benson, 2017). Similarities between Primary Children’s Hospital new rounding protocol and an IPU approach include increased team communication, and improved team based learning.

Another tenet of the IPU model is that, “The providers on the team meet formally and informally on a regular basis to discuss patients, processes, and results,” (Benson, 2017). While these meetings are not done within the pediatrics residency, future additions to GME should look at the possibility of adding opportunities for further collaboration across the health care teams. Residents discussions would facilitate their ability to note relevant information, as well as contribute to their team based learning.

University of Utah Health belongs to an elite group of AMCs that are leaders in GME. In addition to the University of Utah and EPAC, six additional universities recently held conferences that addressed various aspects of GME. All conferences were held in different regions in the country, emphasizing that resident education is a national concern. The six universities highlighted were Vanderbilt University Medical Center, University of Texas MD Anderson Cancer Center, University of California, San Francisco School of Medicine, University of Washington - WWAMI Regional Medical Education Program, Partners HealthCare, and the University of Michigan Medical School.

In summary, each conference maintained the need for change and each laid out several ideas for how change should be implemented. Among these ideas were thoughts that residents and GME should become more community based, and that residents should work toward becoming advocates for their patients. These six conferences reaffirm the need for GME

advances, and illuminate the United States' vulnerability to change in regard to health care.

In conclusion, from the prevalence of advanced technology to the dramatically shifting demographics, it is clear that the United States is in the midst of change, and is having to adapt to the needs of society. GME is undergoing extensive evolution to keep up with the ever-changing health care needs of our country. Pediatrics appears to be a stellar place to start implementing changes, and many AMC's have begun adding more resident-based curriculum to their programs. EPAC and the University of Utah Health are at the tip of the iceberg in understanding how change may shape the future of medical education. Looking ahead, most would agree, this is just the beginning of 'out with the old and in with the new'.

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