



Early Educational Opportunities at the John A. Burns School of Medicine: The MD 5 Curricular Unit

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Introduction

There are many advantages in providing educational opportunities beyond the standard curriculum for medical students. Participation in electives may assist student career choice.¹ Experiences in the humanities may help maintain empathy, improve cultural competence and communication, and increase clinical observation and listening skills.² Research training may help reverse the decline in physician-scientists by promoting clinical research and academic careers.³ International exposures encourage the choice of careers in primary care, improve cultural competence, and increase student participation in volunteerism, humanitarian efforts and working with underserved populations.⁴ Moreover, participation in international medical opportunities can provide clinical experiences in recognizing and treating diseases uncommon in the United States, but essential in treating immigrants or those returning from travels abroad,⁴ a skill that would be applicable in Hawai'i.

In 2008, the curriculum at JABSOM was restructured to encourage students to participate in and benefit from different educational experiences, while providing faculty the opportunity to offer courses in their field of practice and personal interest.

MD 5 Curricular Unit

From the institutionalization of the PBL curricula at JABSOM in 1989 to 2008, all medical students had two requirements in the summer between their first and second years. The first was to complete a student research project in a subject of their choice, and the second was a clinical preceptorship with a primary care physician. The preceptorship and student research project were required to be under the guidance of JABSOM-affiliated faculty. In 2008, the curriculum was restructured so that this period was replaced with MD 5, composed of two 4-week curricular blocks with variable contact hours per week. Students are required to register for one of many selectives offered during one of the two blocks, but may register for two courses in each block.

MD 5 Goals

The goals of the MD 5 curricular unit are to provide students with the ability to select a course that would best meet their academic needs and personal interests, whether it is to review or learn additional biological sciences, to practice clinical skills under various preceptors in different fields, to explore possible career options, or to participate in research. An added goal is to provide opportunities for students to experience health care on the neighbor islands, the US mainland, and internationally.

Under the MD 5 curriculum, students can accept research or clinical fellowships outside of Hawai'i for MD 5 credit. MD 5 was designed to be less rigorous than the other courses in the first and second year, to provide time to pursue non-academic interests and promote "student well-being," a JABSOM Graduation Objective⁵. The flexible schedule allows students to choose variable amounts of vacation, explore other interests and experiences, and participate in recreational activities.

MD 5 Courses

All MD 5 courses are aligned with the JABSOM Graduation Objectives⁵ and created with the JABSOM Educational Philosophy⁶ in mind. The requirements vary and are dependent on the type of experience selected. Students in medical education and biological science selectives are expected to devote 5-10 hours per week. Clinical preceptorships are required to meet no more than four half-days per week. Students in research selectives are encouraged to immerse themselves in their experience and may invest more than the minimum four half-days per week. In addition to courses developed by faculty, students can design their own selective course under the guidance of a faculty supervisor, such as medical education projects or research topics. Active learning methods that focus the responsibility of learning on the learners are encouraged in the selectives.

The MD 5 courses offered in 2012 were:

Medical Education

- Enhancing Clinical Skills Through Art
- MD 1 Coaching
- Cardiovascular Case Maps
- Pulmonary Case Maps

Basic Science

- Highlights of Organ System Biochemistry
- Introduction to Pathology and Laboratory Medicine
- Review of Infection and Immunity and Immunodeficiency Diseases
- Selected Topics in Infectious Diseases

Clinical Experiences

- Clinical Preceptorships (including Internal Medicine, Cardiology, Genetics, Ob/Gyn, Oncology, Ortho Surgery)
- Clinical Preceptorships in Native Hawaiian Health

Research

- Directed Research in Dermatology
- Research in Embryology
- Research in Pediatrics
- Selected Research Topics in Infectious Diseases
- Independent Research

International (Pacific Basin) Experiences

- US Affiliated Pacific Islands
- Japan
- Philippines

The following are descriptions of some MD 5 offerings:

Enhancing Clinical Skills Through Art: The goal was to enhance clinical skills by strengthening observation, interpretation, communication, and emotional competence at the Honolulu Academy of Arts. Each session included interactive discussions around a selection of art from ancient to contemporary and clinical connection. The objectives were to: (1) develop fast complete observation and clear communication skills while observing people portrayed in paintings as patients; (2) recognize that the different possible interpretations of the same factual inferences of portrait patients, and that the attitudes and biases of others, and their own, can impact the diagnosis and treatment of patients; and (3) understand the importance of complete observations and inferences, especially in handling problems and ambiguous situations with patients.

MD1 Coaching: The goal was for second year students to coach incoming first year students in developing their self-directed learning skills. The objectives were to mentor beginning students in: (1) identifying and selecting resources to complete learning issues, (2) synthesizing information into a handout and presenting information to their peers, and (3) mapping concepts and developing study skills for exams.

Clinical Preceptorships in Native Hawaiian Health: The goal was for students to have a focused experience in clinical medicine with opportunities to practice history and physical examination in Lau Ola, the medical clinic in the Department of Native Hawaiian Health, or in a community health center. The objectives were to: (1) perform a complete or organ-specific history and physical exam following an appropriate exam sequence and utilizing correct technique in a manner that reflects a clear understanding of the manifestations of common maladies; (2) respect issues of modesty and personal space when interviewing a patient or performing a physical exam; (3) interpret accurately patient responses, physical findings, and diagnostic test results, adjusting appropriately the likelihood of each illness in the differential diagnosis; and (4) develop and implement an appropriate therapeutic plan that takes into account, efficacy, adverse effects, cost, and compliance issues, in the context of the patient's overall goals, values, and cultural beliefs for conditions found in the Native Hawaiian populations, both acute and chronic.

Research in Pediatrics: The goal was to provide students an opportunity to serve as a clinical research assistant in a project conducted at the Kapiolani Medical Center for Women and Children. The objectives were to learn and demonstrate: (1) effective interviewing skills with smokers interested in quit-

ting smoking, (2) accurate data collection and data entry skills using information gathered through face-to-face and telephone interviews with smokers, and (3) basic understanding of research design and methodology.

US Affiliated Pacific Islands: The goal was for students to observe clinical and community care on remote Pacific islands. The objectives were to: (1) experience health care in an extreme rural area, (2) understand culture aspects of the US Affiliated Pacific Islands, and (3) help islanders understand their health issues. In the summer of 2012, twelve second-year medical students experienced the medical care systems of five of the six US Affiliated Pacific Islands. All students rotated through the Federated States of Micronesia (Yap, Chuuk, Pohnpei, and Kosrae), the Republic of the Marshall Islands, the Commonwealth of the Northern Mariana Islands, Guam, and American Samoa. Experiences included clinical shadowing in clinics and hospitals, public health and disease prevention research, and cultural immersion. Funding was provided by the Hawai'i/Pacific and Guam Area Health Education Center programs, in collaboration with the Department of Veterans Affairs. (See reference #7 for a student's reflection on her experience in 2010.)

Japan: The goal was for students to explore the common health concerns and cultural issues affecting health and the health care system of Japan. The objectives were to: (1) expose students to the healthcare systems of Japan, (2) increase students' knowledge of common illnesses of the region, and (3) expose students to cultural issues affecting health. Eleven second-year medical students were assigned in groups to the affiliated Schools of Medicine in Keio, Kochi, or Osaka. Students interacted with Japanese medical faculty and students in a variety of clinics, hospitals, and communities to examine differences and similarities of patient care between Japan and the United States. Due to the separate locations in Japan, each group had its own unique experience. Experiences included patient home visits to extremely rural communities, pairing with a Japanese medical student to learn about medical student life in Japan and Japanese culture, an overnight stay in a rural town to learn about rural medicine and Japanese culture, shadowing various medical specialties, and attending lectures on medical curriculum and university research. These experiences were subsidized partially by JABSOM's Office of Medical Education.

Philippines: The goal of this course was to provide students the opportunity to explore health issues of people living in a developing country and to foster a deeper understanding of practicing medicine in a culturally sensitive manner. The objectives were to: (1) appreciate the social, cultural, and economic barriers in Global Health by visiting a foreign country; (2) respect issues of patient modesty and personal space in a culturally appropriate manner; and (3) learn about common health issues of the region. Two second-year medical students participated in a 2-day medical mission that served over 1,000 patients. The students shadowed local, international, and JABSOM health

professionals. They also shadowed various medical specialties at a private hospital in Batangas, Manila and visited the University of Santo Tomas. Their experience included a severe monsoon that made travel around Manila almost impossible. This selective was sponsored and funded partially by the Philippine Medical Association of Hawai'i (PMAH) to promote a better understanding of distinct and common health problems of Filipinos living in the Philippines and Hawai'i.

MD 5 Evaluations

Student feedback on MD 5 experiences has been favorable as reflected in the MD 5 2011 Survey Results (Table 1).

Student comments on MD 5 included the following:

“Being able to choose our MD 5 elective was wonderful – I was able to participate in something that I found interest in and benefit in.”

“It provided us with experiences (medical) that could not be read out of a textbook or experienced during lecture.”

“I was able to have an experience in rural health that greatly enhanced my medical education, but I could not have obtained back on O’ahu. I believe that the experience will help me to be a better doctor in the future.”

Loss of Required Research: Its Impact on Students

Two requirements were eliminated due to the incorporation of MD 5. The first was a clinical preceptorship. As students have mandatory clinical skills courses and preceptorships during each curricular unit in the preclerkship years, the anticipated impact was minimal. The second was a student research project. As students had no student research experience required in the remainder of the curriculum, the loss of this facet of the curriculum became a concern. It was acknowledged that not all students would choose to do research, but hypothesized that the revised curriculum would allow for more research productivity for both students and faculty. Students who were most interested in research would be able to approach a faculty member without competing with 65 classmates in need of a required research project. The faculty, in turn, know that the students they accept into their project are truly interested in contributing to the effort of the research team. Students are also able to accept research opportunities in other institutions. In the first year of MD 5, five medical students were involved in research at Case-Western Reserve University, Fred Hutchinson Cancer Research Center, Medical University of South Carolina at St. Jude, and the University of Medicine and Dentistry of New Jersey.

	Statement	Number of Respondents and (Percent)			
		Strongly Agree	Agree	Disagree	Strongly Disagree
1	My MD 5 academic requirements left time for me to explore other interests, experiences, and recreational activities during the summer.	37 (76%)	10 (20%)	1 (2%)	1 (2%)
2	I valued the opportunity to choose my MD 5 courses.	47 (96%)	2 (4%)	–	–
3	The length and level of intensity of the MD 5 block...supports student well-being at JABSOM.	44 (90%)	3 (6%)	1 (2%)	1 (2%)
4	MD 5 was an effective learning experience.	46 (94%)	2 (4%)	–	1 (2%)

	Last Class with Required Research	First Class with MD 5 Selectives
Response Rate	56/59 = 94.9%	45/56 = 80.4%
Percentage of respondents who participated in research	56/56 = 100%	31/45 = 68.9%
Percentage of research participants who had presentations	33/56 = 58.9%	22/31 = 71.0%
Number of presented projects / Number of research participants	35/33 = 1.06	29/22 = 1.32
Number of presentations / Number of projects	51/35 = 1.46	41/29 = 1.41
Highest level of venue presentation per project		
JABSOM/UH	3/35 = 8.6%	2/29 = 6.9%
Local	4/35 = 11.4%	2/29 = 6.9%
Regional	1/35 = 2.9%	2/29 = 6.9%
National	20/35 = 57.1%	15/29 = 51.7%
International	7/35 = 20.0%	8/29 = 27.6%

Table 3: Increased Research Productivity as Measured by Publications		
	Last Class with Required Research	First Class with MD 5 Selectives
Percentage of respondents who had publications	17/56 = 30.4%	11/31 = 35.5%
Number of publications / Number of research participants	18/17 = 1.06	16/11 = 1.45
Number of publications in non-local journals	8/18 = 44.4%	14/16 = 87.5%
Number of publications in Journal Citation Index	7/18 = 38.9%	12/16 = 75%
Mean Impact Factor	2.74	3.67
Standard Deviation	2.58	2.00
Number of citations in Web of Science	7/18 = 38.9%	9/16 = 56.2%
Mean number of citations	0.57	1.71
Standard Deviation	0.79	2.14

The Office of Medical Education surveys medical student research productivity in each graduating class. This allowed for the comparison of research productivity from the last class with a required research project, and the first class with MD 5 selectives. The former had a survey response rate of 94.9% and 100% participated in research, while the latter had a survey response rate of 80.4% and 68.9% of respondents participated in research. However, there was an increase in the number of presented projects per research participant, and a slightly greater proportion of presentations at the regional, national, and international levels compared to the in-school and local levels (Table 2).

There was an increase in the number of publications per research participant, a near-doubling of publications in non-local journals, publication in journals with a higher mean impact factor as noted on the Journal Citation Index, increased number of publications that were cited by other publications as noted in Web of Science, and an increased number of citations per publication (Table 3).

Conclusion

MD 5 is a new curricular unit that provides second-year students an opportunity to choose an educational experience that meets their need or interest. Students may explore basic science

courses, clinical preceptorships that allow for career exploration, research experiences and fellowships, international rotations, and innovative courses in the humanities and student mentoring. It is less rigorous by design, providing the students with some respite between organ system-based units with high academic demands. In addition, this forum provides an “educational sand-box” for faculty who wish to experiment with different content or educational methods. Extremely well-received by students, MD 5 has added a richness to the educational experience while simultaneously increasing the quality of student research.

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References

1. McMahon GM, Thomas L, Tucker JK, Lin J. Factors in career choice among US nephrologists. *Clin J Am Soc Nephrol*. 2012 Sept 6. [Epub ahead of print].
2. Schwartz AW, Abramson JS, Wojnowich I, Accordino R, Ronan EJ, Rifkin MR. Evaluating the impact of the humanities in medical education. *Mt Sinai J Med*. 2009 Aug;76(4):372-380.
3. Solomon SS, Tom SC, Pichert J, Wasserman D, Powers AC. Impact of medical student research in the development of physician-scientists. *J Investig Med*. 2003 May;51(3):149-56.
4. Grudzen CR, Legome E. Loss of international medical experiences: knowledge, attitudes and skills at risk. *BMC Med Educ*. 2007 Nov 28; 7:47.
5. Sakai DH, Kasuya RT. The John A. Burns School of Medicine (JABSOM) graduation objectives. *Hawaii Med J*. 208 Nov;67(11):301-2.
6. The JABSOM Educational Philosophy. <http://jabsom.hawaii.edu/facdev/FacHandbook/EducationPhilosophy.asp?tab=FacHandbook>. Accessed Nov 3, 2012.
7. Dilcher KE. Reflections on an eye-opening rural health experience of a second year medical student. *Hawaii J Med Public Health*. 2012 Apr;71(4 Suppl 1):68-70.