

Undergraduates at California State University Sacramento who wish to pursue a career in a health profession (medicine, dentistry, pharmacy, optometry, physical therapy, occupational therapy, podiatry, and others) require specialized advising throughout their academic careers that extends beyond that for the typical major. In most cases, students need strict guidance regarding which elective courses to take within the major, which general education courses are most appropriate for their particular professional program, and which course combinations within a semester are the most conducive to success. The combination of these factors makes undergraduate academic advising to this population of students both extraordinarily important and very complex. Unless faculty have personal experience with these professional fields, or have otherwise gleaned knowledge in advising pre-health professionals (through work with the Science Educational Equity program, for example), the information passed from faculty to student is often inadequate. The high rate of retirement of faculty knowledgeable in this area (Biological Sciences has 2 of their 4 most experienced faculty on pre-retirement reduced loads; Chemistry's most experienced pre-health advisor is recently retired), has left a great need for faculty who understand the nuances of pre-health advising. It has been difficult to foster this understanding, however, given the demands on the time of junior faculty, who are being pulled in many directions. By developing a multifaceted, well-organized approach to educating faculty, students will more efficiently obtain the information they need to gain acceptance into professional health programs. The two primary goals of this project are: 1) To increase the skills and knowledge base of faculty who advise pre-health students; and 2) To produce materials for both students and faculty that will facilitate pre-health advising in the future.

In the most recent survey of undergraduate majors in Biological Sciences (conducted in 2004), 44% classified themselves as "pre-health" (pursuing a career as a health professional). [It should be noted that this does not include pre-nursing students, a very large group within their own major classification] The pre-health group was by far the greatest subset of majors surveyed. In Chemistry, that number is likely to be similar. In total, these two majors comprise 73% of the College of Natural Sciences and Mathematics (763 majors in Biological Sciences; 208 majors in Chemistry)¹. This would predict an overall number of around 430 students who consider themselves to be pre-health, and underscores the need for a well-developed academic advising program within the College. It should be mentioned that in addition to students majoring in the sciences, there are generally dozens of students majoring in areas outside of our College (Anthropology, Health Science, Foreign Language, etc.) that wish to pursue health professions. This is particularly true for pre-med students. These non-science majors have an even greater need for specific advising, as they are generally looking to complete only the required course work, and this is an ever-changing target with "hidden" fundamentals (for example, Biochemistry, although rarely if ever "required", is absolutely essential for success during the first year of medical school).

We propose the development of a comprehensive pre-health advising program, to be housed within the College of Natural Sciences and Mathematics. The faculty coordinator for this project will receive 3 units of assigned time to offset their work developing the structure of the program and working with participating faculty (details follow). To sustain the efforts of the program, the faculty coordinator position will rotate among four faculty from the College (Jennifer Lundmark, Tom Landerholm, and Brett Holland - Biological Sciences; Katherine

¹ Data for 2004 from the Office of Institutional Research

McReynolds - Chemistry). Each will receive 3 units of assigned time during their semester as coordinator². These faculty have agreed to continue to share responsibility and divide the overall workload after the two-year development period, when the demands on faculty time should be minimized by the structure of the established program. As part of their duties (described in detail later), these faculty leaders will conduct advising workshops for their peers on the nuances of pre-health advising. This project will result in a College faculty who are well-equipped to advise our students pursuing health professional careers. Tangible products (handouts, guides, etc.) that ease the stress of advising in these complicated situations will enhance this. The effect of this project will be assessed via pre- and post-surveys with the College faculty (to gauge their knowledge, comfort level, and overall impressions of pre-health advising). Students will also be assessed as to their perception of the advising they receive.

During the semester in which they receive assigned time, the faculty coordinators will work to establish the structure of an advising program that will be self-sustaining. To coordinate these efforts, it is proposed that the four participating faculty meet monthly during each of the four semesters, with the faculty leader for that semester assuming responsibilities for the particular tasks the committee deems most pressing. There are a large number of things to be done in this area; proposed ideas include:

Compiling a comprehensive databank of what is needed to apply and to be successful in the various health professions:

This in itself is a task that will require 100+ hours of work, and we request an extra 3 units for someone to compile this database². At least fourteen different “health professions” are widely recognized, each with their own admissions standards, course prerequisites, and other criteria. There are subtle differences between the academic requirements for entry into the programs in different fields, and this can result in significant changes in the courses chosen by a student. For example, medicine, dentistry, and pharmacy require a different series of organic chemistry than do veterinary medicine and optometry. This is a difference of three courses vs. one course, which can have a marked impact on a student’s schedule. In addition, each field has its own particular oddities. Dentistry requires human anatomy, whereas medicine, strangely, does not. Pharmacy programs insist on Econ 1A (not Econ 1B); medical schools generally accept only Coms 4 or 5 (not other communications courses), and many dental programs prefer to see jewelry-making or ceramics in a student’s schedule (to demonstrate fine motor skills). Because standardized test requirements for the various fields vary widely, advising in preparation for taking these exams also requires specificity. Students preparing for the DAT (Dental Admissions Test) need a great deal of specific science content, whereas students preparing for the MCAT should place more emphasis on reading and writing (by taking upper division History or English, for example). The examples continue, and these are only issues relating to the primary health fields. The allied health fields, which in many ways are a better “fit” for our students because of the particular demographic we serve, have nuances we are barely aware of. We are critically undereducated as a faculty when it comes to academic advising in these arenas.

² One of the four faculty would receive an additional 3 units of assigned time for their extra work in compiling the comprehensive database, described in the first proposed task.

Compiling a list of preferred courses in General Education and working with Academic Advising to make students and advisors aware of its presence:

As described above, students applying to health professional programs often must meet specific requirements via courses outside of their chosen major. In addition to the examples cited above that are specific to certain fields, there are some general courses (e.g. Psych 1) that are required or recommended by virtually every health professional program, and others (like courses in Ethics) that are simply a good idea, and may help the student upon interview for admission. There are little "tricks" that few advisors know about, like saving Area E for an upper division GE course, where there are some good health-related choices, with many others that remain to be discovered or disseminated.

Working with the Career Development Center to develop and provide workshops in exploring allied health professions:

Most undergraduates interested in a health career rarely consider choices beyond the primary fields. For this reason, we have more students on the pre-med or pre-dental track than can be accommodated by the professional schools, and many of them are a poor match for those professions in the first place (because of family obligations or similar needs). Generally, this situation arises because students are simply unfamiliar with other career options in the health arena. There is presently a surge in the variety of allied health fields that would be outstanding career choices (e.g. occupational therapy, physician's assistant programs, podiatric medicine, and optometry). Many of these have surgical subspecialties, hospital-based residencies, and many of the perks of the "primary" health fields without the long post-baccalaureate school requirements, and are an excellent choice for our students. If students were provided with more information and internships in these areas, they could make better choices regarding their preparatory courses and have more focus in completing the course requirements.

Developing a consistent application process to health professional programs:

Once students have committed to applying for a professional program in the health sciences, the role of the pre-health advisor intensifies. Students applying to programs in health fields generally require a letter of recommendation from a pre-health committee, comprised of at least three faculty. The faculty involved must arrange for and conduct an hour-long interview with the student, write the letter, and then arrange for copying, printing on letterhead, gathering signatures and mailing. Obviously, writing the letter must continue to be a responsibility of faculty, but the remainder of these tasks can be streamlined and arranged by support personnel. The College of Natural Sciences and Mathematics has agreed to provide administrative support for this program if this proposal is funded³, but the details (sequence of events, who does what) need to be negotiated. The Science Educational Equity (SEE) program has a history of success in this area and has agreed to provide some assistance here.

Developing a guide to writing appropriate letters of recommendation:

As mentioned above, the recommendation letter to a health professional program is of great importance and requires a great deal of work on the part of faculty advisors (~ 15 hours per letter). However, it is also an area of potential advantage for students at CSUS, which should be developed. For many reasons, we have very insightful relationships with our students, but

³ See attached letter from Dean Marion O'Leary

how this is translated into a letter of recommendation varies, as some faculty have a better idea of what's needed than others. We are not exploiting this advantage, and we should.

Providing students with consistent information on what the application cycle involves:

Students who wish to apply to a professional program often have no idea how the process works - when to take a prep course for a standardized test, when to take the exam, how to gather letters of recommendation, etc. Many of these issues are critically important. For example, the MCAT is offered twice a year, in April and August. Test results take about 3 months to receive, and the application cycle begins in June. So, if a student takes the April MCAT and applies that summer, all should be fine. However, if they take the MCAT in August (as many naive students do), their results aren't received until November, at which time most interview slots at medical schools are filled. There is an extraordinarily low success rate for students who use the latter example of timing, yet unless they are advised otherwise, many will waste hundreds to thousands of dollars on a fruitless application (instead of either taking the test earlier, or delaying their application until the next year). Designing a comprehensive handout that details the process for students will also save hours of faculty time each semester, as we presently explain this process to each student individually. A well-designed handout, which would also be made available via the web, could address the above issues as well as: selecting faculty for a pre-health committee, reserving a room for committee interview, how online applications and testing works (where appropriate), lining up outside letters of recommendation, writing a personal statement, etc.

Also providing faculty with a "guide" to what the application cycle involves:

Faculty knowledge of the application process is inconsistent, and often gained simply through experience, which is both time-consuming and unpredictable. Faculty that are unaware of the issues involved can be apprehensive of the workload associated with some of the unfamiliar tasks. A comprehensive guide for faculty could address such issues as: how much time is involved with the process from start to finish, what are the responsibilities if one serves as Chair of the committee (and primary author), how should students be counseled on the timeframe of the process, what are some realistic guidelines regarding GPA/standardized test scores and success rate of applicants, which schools are a better "fit" for our students and why, problems with taking the August MCAT and applying that same summer, as well as common issues for pre-health students like what courses they shouldn't take at the community college.

Compiling data on success rate of applicants and where they attend:

Applying to health professional programs is very expensive for students, usually hundreds of dollars for each school they choose. When selecting the professional programs to which they will apply, students often ask about where our graduates are most successful, yet we have little data on this. It is possible to receive reports of scores from the testing administrators (MCAT, DAT, etc) on all of our students who take the exam. There are also reports from the associations of some professional schools (e.g. Association of American Medical Schools, Association of American Dental Schools). There are valuable data on who applied where and to what stage of acceptance they proceeded. Those data could well be used to counsel our students, and over the years will provide us with valuable assessment data regarding the effectiveness of our advising.

Working with the Career Development Center to develop workshops on interview skills:
 Reaching the interview stage of the application cycle for most professional programs is a tremendous accomplishment in itself, and can be an intimidating hurdle for students. The Career Development Center (CDC) does conduct interview workshops for students, but it would be very useful to have something tailored to the pre-health interview. There is background research to be done by the advising faculty prior to consulting with the CDC, as this pool of information has not been updated in several years.

Leading workshops for faculty in the College to disseminate information:

One of the primary goals of this proposal is to create an educated faculty with regard to pre-health advising. Implicit in this goal is disseminating materials and ideas to those not serving on the four-person cohort. We anticipate that this dissemination will primarily occur in the second year of the project, when most developed materials will be in place.

Obviously, much needs to be done to bring the college faculty "up to speed" and to provide our students with their best chance of success in professional programs. To facilitate the education of the four faculty participating in this project, we are asking for travel money to support their attendance at the biannual National Association of Advisors in the Health Professions (NAAHP) conference in Portland, OR (June, 2006). The College of Natural Sciences and Mathematics has agreed to provide some support for this endeavor by funding the cost of membership in the NAAHP for the four involved faculty (\$130 each), as well as their registration costs for the conference (estimated at \$275 each). We are asking, in this proposal, for travel money in the amount of \$500 each, or \$2000 total, to support air travel and accommodations. This amount will not completely cover the conference expenses, but will minimize individual faculty costs.

Attendance at the NAAHP conference is quite possibly the most valuable component of this proposal. Attended by over 300 pre-health advisors and professional school delegates from across the United States, this is the premiere conference of its type. Representatives from all of the primary and allied health professions give updates on what has changed in terms of requirements, application cycles, admissions tests, etc. The Deans of Admission for most prominent professional schools are in attendance and lead sessions on how they evaluate applicants. Some of the workshop titles from the June, 2004 conference included: "Professional Trends and Updates" (two separate sessions with fourteen different professions represented), "Diversity: the Impact of the Supreme Court Decision on Admission Processes and Advising", "Admissions Workshops", "Diversity in Medical Schools - Way Beyond Race", "Meet the Deans", and "Dealing with the Next Generation of Learners".

SUMMARY OF PROPOSED EXPENSES

Budget Item	Cost covered by College NSM	Cost covered by proposal	Cost covered by faculty
NAAHP membership	4 @ \$130 = \$520		
NAAHP conference registration	4 @ \$275 (estimate) = \$1100		
Airfare and accomodations		4 @ \$500 = \$2000	remainder of expenses

