

## **The Premed Primer for St. Lawrence University**

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### INTRODUCTION

The purpose of these pages is to help you deal with questions you may have about becoming a physician.

Because admissions are very competitive, it may seem that getting into medical school requires elaborate strategy and planning from as far back as nursery school. This is not true, but it surely helps to plan in advance. To some degree everyone experiences the tension and insecurity of being premed. Resist if you can. You do not have to be a "typical premed" to be successful. The best advice a premed can get (and there is plenty available), is to be true to yourself. You do not have to sell your soul to become a doctor. Choose courses, a major, and extracurricular activities on the basis of both premed requirements and your interests. Use your time at St. Lawrence to focus on what your interests are.

If after reading the following pages you have additional questions, any member of the Health Careers Committee will be happy to talk with you. If your primary advisor is not a member of the Health Careers Committee you might wish to have a committee member serve as your secondary advisor. The list of current Health Committee members is available from the Biology secretary.

#### Should I come to St. Lawrence if I think I am interested in eventually becoming a Physician?

St. Lawrence University has a good, basic premedical curriculum. Many recent St. Lawrence graduates have been successful in obtaining admission into top medical schools. However your acceptance into medical school will not be determined by what college you have attended. The burden of maintaining a good record (both academic and otherwise) is the responsibility of the individual. Premeds with poor records should not expect the reputation of St. Lawrence University to get them into medical school.

### Will Advance Placement and Advanced Credit affect my chances for medical School Admissions?

On the basis of superior ability and educational attainment in secondary schools, some St. Lawrence students are admitted to the University with advanced placement in one or more subject areas. The program of advanced placement is looked upon with favor by the professional schools when it improves and increases the challenge of secondary school education and when it permits enrichment of your college years by enabling you to take upper level and graduate level courses. The program is not encouraged when the aim is merely to speed you through college. Students who have received advanced placement credit for their secondary school science are fortunate in that they have an opportunity to study the sciences at a more advanced level.

If you receive advanced placement and/or credit for courses taken in high school, be sure this is indicated on your official university transcript. Always inform your faculty advisor about this credit. Since some medical schools will not accept advanced placement credit. It is a good idea to take advanced subjects in biology, physics, mathematics and chemistry in college if you meet any of the minimum medical school science requirements through enrollment in advanced placement courses in high school.

### What Undergraduate Courses are Required by Medical Schools?

Requirements do vary, but for most schools you must have a minimum of:

- 2 semesters of biology with lab (Bio 101-102)
- 2 semesters of inorganic (general) chemistry with lab (Chem 103-104)
- 2 semesters of organic chemistry with lab (Chem 221-222)
- 2 semesters of physics with lab (Phy. 103-104 or 151-152)
- 2 semesters of English - required by many schools (any of the 100 or 200 level courses)

In addition, a significant number of medical schools require or strongly recommend at least one semester of mathematics, and many schools are also requiring or recommending a semester of biochemistry.

For complete information about requirements, consult the latest edition of:

Medical School Admissions Requirements  
 Association of American Medical Colleges  
 One Dupont Circle, N.W.  
 Washington, D.C. 20036

Personal copies are available from the AAMC. The web address is [www.AAMC.org/students](http://www.AAMC.org/students).

### What courses will be helpful even though they are not required?

Language: Spanish would be the most useful, especially if you plan to practice in a large city, in the Southwest, or on the West Coast.

Science: After the above required courses, this is an individual decision. Whatever science you take will lessen your work in medical school. On the other hand, college is your chance to learn about a vast range of non-science subjects which you will not have time for later. In addition to the biochemistry

suggested above you should seriously consider taking courses in genetics, microbiology and physiology.

Computer Science: This would be useful during your medical education as well as in your practice, although it is not an absolute necessity.

If a student carries a heavy course load or takes more difficult courses than some other students, does this give him or her an advantage? If so, how much of an advantage?

The character and the caliber of the course load are taken into account, but not to the extent that it would justify taking a heavier load or more difficult courses if this resulted in lowering the GPA significantly.

Should I take Science Courses Pass/Fail rather than for a grade?

You must do well in the basic and advanced science courses that you take to meet the entrance requirements for medical schools, and you should take them for a grade and not on the pass/fail grading option. The intent of the pass/fail grading option is to encourage you to explore a wide range of potential academic interests.

Should I complete a four year degree Program at St. Lawrence before entering a Professional school?

For entrance to medical school, it is normally advantageous to pursue and complete a degree program. Some medical schools accept a small number of students after only three years even though they have not completed the Bachelor of Arts or the Bachelor of Science degree. In these cases, St. Lawrence University will award the bachelor's degree upon graduation from the professional school and on further condition that all distribution requirements prescribed by the University have been fulfilled. Medical schools are, however, increasingly advising students to complete the four-year college program before entering professional training.

Does it matter what I major in at St. Lawrence?

No. Most students who apply to health professional schools have majored in one of the sciences; however, each entering class does contain a significant number of non-science majors. The key is that you do well in your specialty, and even if science is not your major, it is important that you have a strong science background.

Are good grades a major factor in medical school admissions?

You must realize that the caliber of student applying to medical school has significantly improved in the last ten years. Competition is now so keen that only one out of every four premeds applying will actually be accepted. Obviously then, one way in which admissions committees rank qualified applicants is on the basis of their performance in college, especially in the required science courses. A grade point average below a 3.25 will certainly injure your chances for admission. (The average GPA of students entering many medical schools throughout the country is approximately 3.6). Therefore, although good grades alone will not get you into most schools, your academic record is very important.

If you do poorly in a science course, take another and do well. If you get a couple of low grades (1.0-2.0), do not give up. There are bona fide medical students with such grades on their college transcripts.

### What is the M.C.A.T. and when should it be taken?

The Medical College Admissions Test is a computerized, standardized multiple choice test which you should take in your junior year.

The MCAT is directed towards assessing skills and knowledge essential to one's successful performance in basic medical sciences and clinical practice, and so does not merely reflect emphasis on current curricula in undergraduate colleges. The test is designed to measure not only accumulated knowledge, but also problem solving capacity, ability to interpret data, and other relevant areas.

The MCAT includes four sections: Biological Sciences, Physical Sciences, Verbal Reasoning, and a Writing Sample. The test-day schedule is as follows:

Section	Number of Questions	Time in Minutes
Physical Sciences	52	70
Verbal Reasoning	40	60
Writing Sample	2	60
Biological Sciences	52	70

An optional ten-minute break is provided between each section.

A series of problems describing situations upon which multiple choice questions are based make up the Physical Sciences test. The test contains problem sets of 5 to 10 questions each. Additional problems are each followed by a single question. The problems include data presented in graphs, tables, and charts. The questions are designed to assess knowledge of basic concepts and facility with scientific problem solving in physics and in the physically-related chemistry areas as well as the ability to interpret data presented in a tabular or graphic format.

The concepts covered by this test are determined by surveying undergraduate faculty members on the level of coverage they give potential topics in their introductory chemistry and physics course sequences. Medical educators, medical students, and physicians were then asked the relevance and importance of the topics for the study and practice of medicine. Chemistry and physics topics judged as prerequisite by medical school respondents and covered at a majority of undergraduate institutions in introductory course sequences were selected for inclusion in the test.

Physics and chemistry concepts included in the Physical Sciences test are considered basic; in the vast majority of institutions, they are taught at the introductory level. The people who make up the exam indicate that advanced level coursework in physics and chemistry is not required for the test.

Prose passages from the humanities, social sciences, and natural sciences makes up the Verbal Reasoning test. Each passage is followed by six to ten questions based on information presented in the passage. Some questions assess basic comprehension of the text; others require the examinee to analyze data, evaluate the validity of an argument, or apply knowledge gained from the passage to other contexts. Since the humanities, social science, and natural science disciplines encompass a vast range of materials and courses in these areas differ immensely in content, test questions do not cover a specific set of topics. The content information necessary to answer test questions is presented in each passage.

The Writing Sample consists of two topics; examinees are allotted 30 minutes to respond to each.

Topics for the Writing Sample are designed to assess skill in the following areas:

- Development of a central idea;
- Synthesis of concepts and ideas;
- Cohesive and logical presentation of ideas; and
- Clear writing, following accepted practices of grammar, syntax, and punctuation, consistent with times, first-draft composition.

Each essay question provides a specific topic that requires an expository response. Essay topics do not pertain to the technical content of biology, chemistry, physics, or mathematics; the medical school application process or reasons for the choice of medicine as a career; social or cultural issues not in the general experience of MCAT examinees; or religious or other emotionally charged issues.

Each essay is rated on a six-point scale by two separate readers. Essays receiving scores more than one point apart are evaluated by a third reader. The total scores for the essays is averaged and converted to an alphabetical scale for reporting. Medical schools receive alphabetical scores and may receive student writing samples. Percentile data, score distributions, and descriptions of the characteristics of papers at each score point is provided on the score reports to examinees and schools.

A format similar to that of the Physical Sciences test is used on the Biological Sciences test. The test includes problem sets of 5 to 10 questions each and additional single-question problems. The test assesses knowledge of basic concepts and facility with problem solving in biology and the biologically-related chemistry areas. The examinees are required to interpret data presented in tabular or graphic format.

Like the concepts included on the Physical Sciences test, biological science concepts were identified by surveying undergraduate and medical school faculty, medical students, and physicians. The biology and chemistry concepts included in this test are considered basic. In the vast majority of cases, they are taught at the introductory level. Advanced science coursework is not a requirement but advanced courses may help solidify your understanding of the material covered in the introductory courses.

#### What Study Materials are Available for the MCAT?

The American Association of American Medical Colleges (AAMC) offers authentic, comprehensive content outlines and test descriptions. Many illustrative items, types of score reports, and regulated guidelines are also included in the discussions. Most significant is the presentation of the important knowledge topics in science and essential skills to be assessed by the exam. This tells you the areas for which you will be responsible in the testing. Order forms for these manuals can be obtained by writing AAMC, Membership and Subscription Department, Suite 200, One Dupont Circle, N.W., Washington D.C. 20036, or through the AAMC web site ([www.aamc.org/mcat](http://www.aamc.org/mcat)). The AAMC also offers practice tests.

### Where and When is the MCAT given?

The MCAT is given 24 times a calendar year from January until September. Students can take the exam three times a year although clearly the best plan is to do well the first time you sit for the exam. Scores are reported within 30 days of your taking the exam.

The closest exam centers in New York are in Watertown, East Syracuse and Albany. Exam centers are also located in Ottawa, Ontario, Canada and Williston, Vermont.

Registration is only available on line. Go to [www.aamc.org/mcat](http://www.aamc.org/mcat) for more information about the exam and for instruction about how to register. Because space at the testing centers is limited, you are encouraged to register early.

### How important are the M.C.A.T. scores?

This question is difficult because each medical school has its own policy. Moreover, the MCAT is just one piece of information in a total application.

The scores on the science and quantitative sections are very important because they are the only objective measure by which admissions committees compare students all over the country. If some of your science grades are low, then a good science score is very helpful.

If you do poorly on the MCAT, do not despair. The other strengths in your record will help. Arrange to take the test again. Use the additional time to fill in the gaps in your scientific knowledge by taking additional courses, getting a tutor or (if you have the discipline) self study.

### I understand the format of the M.C.A.T. will change in 2015. How will the new exam be different from the current one?

The MCAT is scheduled to undergo significant changes in 2015. The new exam will have will have four test sections:

1. *Biological and Biochemical Foundations of Living Systems,*
2. *Chemical and Physical Foundations of Biological Systems,*
3. *Psychological, Social and Biological Foundations of Behavior,* and
4. *Critical Analysis and Reasoning Skills*

Scores are reported on a scale similar to the current 1-15 scale, and a separate score is recorded for each of the four test sections: four sections, four scores.

The *Biological and Biochemical Foundations of Living Systems* and the *Chemical and Physical Foundations of Biological Systems* sections are designed to:

- test introductory-level biology, organic and inorganic chemistry, and physics concepts;
- test biochemistry concepts at the level taught in many colleges and universities in first-semester biochemistry courses;

- test cellular/molecular biology topics at the level taught in many colleges and universities in introductory biology sequences;
- target basic research methods and statistics concepts described by many baccalaureate faculty as important to success in introductory science courses; and
- require you to demonstrate your scientific inquiry and reasoning, research methods, and statistics skills to solve problems that demonstrate your readiness for medical school.

The *Psychological, Social and Biological Foundations of Behavior* section is designed to:

- test your knowledge and use of the concepts in psychology, sociology, and biology that provide a solid foundation for learning in medical school about the behavioral and socio-cultural determinants of health;
- target concepts taught at many colleges and universities in one-semester introductory psychology and one-semester introductory sociology courses;
- target biology concepts that relate to mental processes and behavior that are taught at many colleges and universities in introductory biology; and
- target basic research methods and statistics concepts described by many baccalaureate faculty as important to success in introductory science courses; and
- require you to demonstrate your scientific inquiry and reasoning, research methods, and statistics skills using knowledge of social and behavioral sciences concepts.

The *Critical Analysis and Reasoning Skills* section is designed to:

- test your analysis and reasoning skills by asking you to critically analyze information provided in reading passages;
- test your comprehension, evaluation, application, and information incorporation skills;
- include content from ethics, philosophy, cross-cultural studies, and population health and a wide range of social sciences and humanities disciplines; and
- provide all the information needed to answer questions in the passages.

A guide for the new exam is available on AAMC's website. The Preview Guide for MCAT<sup>2015</sup> describes the new exam's content and format. It provides detailed descriptions of the knowledge and skills the new exam will test, includes detailed content outlines, and provides example questions. It also includes information about products and services that are designed to help you prepare for MCAT<sup>2015</sup>. For a copy of the guide, please visit [www.aamc.org/mcat2015/preview.pdf](http://www.aamc.org/mcat2015/preview.pdf). This web site is the source of the above text.

In which extra-curricular activities should I participate?

Above all else, pursue your own interests as far as possible. It is a good idea to do some work in a scientific or health-related field. This will help you discover how real your interest is through practical experience. It will also demonstrate to admissions committees that you have the interest and ability to perform a job in a hospital setting or to carry out a scientific project.

How do I obtain letters of recommendation for my medical school application?

At St. Lawrence University, medical school recommendations are made through the Health Careers Committee. The procedure, to be completed the spring semester of your Junior year, is as follows:

1. Complete the Student Information Sheet. Copies can be obtained from the Biology department office.
2. Obtain 3-7 recommendation forms from the Biology Office. The forms are to be distributed by you to instructors or administrators of your choice, along with envelopes addressed to Dr. Hornung, Biology Department, Bewkes Hall. They will then complete the forms, place them in the addressed envelopes, and return them directly to Dr. Hornung. Letters should be requested from faculty or staff members who know you well. The quality of the Committee's letter will be in large part a reflection of the thoroughness and detail with which the above people express their opinions. A minimum of three faculty/staff recommendations are required.
3. If you choose to sign the waiver, turn it in to the Biology office at your earliest convenience. Otherwise, simply discard it. The waiver is not a requirement for consideration of your application or any other service of the Health Careers Committee; and it will not affect your letter of recommendation.
4. When your folder is complete, an interview with the Health Careers Committee can be arranged. A sign-up sheet will be available in the Biology department office. Interviews will begin early in the spring semester.
5. Turn in to the Biology office a list of those schools to which you want recommendations sent. Of course, other schools may be added to your list later, but please make the initial list as complete as possible.
6. Your own correspondence with the schools -- requests for information and application forms, should begin during the second semester of your junior year. Applications should be submitted in the early summer after your junior year. You should ask the SLU Registrar to forward transcripts to the schools shortly after applications have been submitted.

#### Should I waive the right of access to my letter of recommendation?

With the passage of the Family Educational Rights and Privacy Act of 1974 (a part of the Educational Amendments of 1974, P.L. 93-380) which became effective November 19, 1974, and as amended (Sec. 438(a) (1)(B)(C)), students are asking if their letters of evaluation should be requested on a confidential versus nonconfidential basis. The Health Careers Committee provides you with the option of signing individual waiver forms by which you may waive your right of access to confidential letters of evaluation obtained in support of your application for professional school. You do not have to sign this waiver in order to use the services of the Health Careers Committee.

It has been the experience of a number of Health Career advisors that some professional schools may place more credence in letters of evaluation that have been secured on a confidential basis. Let's face it, the odds are in your favor with the St. Lawrence system, since you are able to select the people who are going to write the letters. Also, you certainly will not intentionally ask a person for a letter if you know he/she will not write you a favorable evaluation. Indeed, the members of the Health Careers Committee have observed that faculty members of St. Lawrence are honest and caring when evaluating students. Thus some people would argue that if you want your letter to have the greatest amount of credibility

with the professional schools, you should elect to have your letter kept confidential. However, before waiving the right of access to your letter of recommendation, you should realize that if waiving has any positive effect on your application at all, this effect is slight. Also, as is true whenever you are given the option to waive any of your rights, the final decision is up to you. So, consider both sides of this issue before making a final decision.

Does it help to have governmental and/or community leaders write special letters to the dean and the admissions committee?

The most meaningful letters of appraisal are from the pre-professional advisors or those who have known the applicant as a student or who have employed him or her.

When should I apply to medical school?

You should take the MCAT in May of your junior year and write for applications in June of the same year. Deadlines vary, but most are in the late fall of the year before admission.

It is important to get your applications in as early as possible to allow for both bureaucratic tie-ups and for the first-come first-serve policy of many medical schools.

Is it easier to obtain acceptance in some schools than others?

Yes. State supported schools generally give preference to legal residents of that state. Because each school uses slightly different criteria for admission, it is conceivable that an applicant might be more acceptable to one school than another. Selection is competitive in all schools, but some receive larger numbers of applicants and some have a high percentage of extremely well-qualified applicants. Also, competition may vary with each school from year to year.

How should I decide where to apply to medical school?

First, decide what you want in a school. Are you interested in research, practice, teaching, or a combination? Do you prefer one area of the country? Do you want to live in an urban or a rural setting? If you like the area, you will have a better chance of being happy. You will find time to enjoy your environment.

Once you have some idea of the kind of school you want, find out which schools are likely to accept you. The members of the Health Careers Committee can make some helpful suggestions. Another good source of pertinent information is the booklet of the Association of American Medical Colleges (see section on courses required by medical schools).

Many good schools are not well known in all parts of the country. Look beyond the superficial value of a big name school. You can become a doctor at any licensed school. When you visit medical schools, talk to the students. The student cafeteria is the best place to meet people during their free time. Start with a list of the schools that you might qualify for (be realistic). Apply to a couple of long-shots and six to ten schools within your academic range. This number should be adequate, but apply to as many schools as you think are necessary.

What are Early Decision Plans?

The Early Decision Plan (EDP) utilized by some medical schools permits an applicant to file a single application (usually prior to August 15) and guarantees that the applicant will receive a prompt decision by that school (usually on or prior to October 1). Should you not be admitted as an early decision candidate, you may be reconsidered by that school as a regular candidate and, of course, may then apply to other schools. It is important to understand that applicants who opt for early decision may not apply to any other U.S. medical school during the time their credentials are being considered for early decision. If admitted to an early decision school, you must then attend that school. If not admitted, you may then apply to other schools.

For further information consult the latest edition of Medical School Admission Requirements. This publication also lists those medical schools utilizing the early Decision Plan.

Is there any preference to age and does an applicant have a chance if she/he is older than 25?

Anyone in his/her 20's or 30's is considered with little or no special preference to age. When 40 or over, maturity is recognized, but it is an individual situation. In recent years the average age for students entering medical school was between 25 and 26.

What professional school application services are available?

The American Medical College Application Service (AMCAS) is a centralized process which facilitates the procedure for applying to participating medical schools. It is available only to individuals applying for the first year of study leading to the M.D. degree. As an applicant you complete only one application for admission and furnish only one set of official transcripts to AMCAS to initiate your application to any of the participating medical schools. The medical schools then notify you of further steps necessary to complete the application at the particular school.

AMCAS does not render any admission decisions nor guarantee admission; all decisions rest with the individual medical schools. AMCAS cannot advise you where to submit an application nor provide other admission advice. AMCAS provides only the application service. Except for AMCAS correspondence, all communications to specific medical schools should take place directly between you and the school.

A non-profit service of the AAMC, AMCAS collects, processes and coordinates data, effectively reducing the time and, in many cases, the expense for the student. Of paramount advantage to you is the need to submit only one application for admission and one set of official transcripts, regardless of the number of AMCAS schools to which you are applying. The MCAT scores are automatically forwarded to only those AMCAS schools you apply to. This total operation neither alters nor de-personalizes the principles of traditional application procedures. Each participating school is completely autonomous in reaching its admissions decisions.

Request forms for AMCAS applications are available on line from the AAMC web site ([www.AAMC.org/students](http://www.AAMC.org/students)) or from the SLU Biology Department web site (<http://it.stlawu.edu/~biology/health.html>).

How do I apply to medical schools not participating in AMCAS?

Students who wish to apply to medical schools not participating in AMCAS must obtain application forms directly from the individual medical schools' admissions committee. The mailing addresses of any

medical school in the United States or Canada can be obtained from the latest edition of Medical School Admission Requirements.

#### What should I expect from a medical school interview?

Interviews have different styles, but they all are professionals and so are very perceptive. Therefore be yourself. Some interviewers chat; some bombard you with questions. If an interviewer tries to stress you do not become defensive. Carry yourself with confidence. You do not have to agree with your interviewers but try not to fight with them. Try not to antagonize your interviewer by your style of dress or speech (no four letter words). The following is a list of topics you might think about before you are actually under fire:

- a. Current medical problems: abortion, health care delivery systems, rising medical costs, malpractice.
- b. Motivation: how you became interested in medicine. Here it is useful to have done something to acquaint yourself with health care.
- c. Your activities: how you have learned from any special projects or independent studies. If you want to discuss your research, be well prepared. It may be your interviewer's specialty.

If you have a strong interest in attending one school for special reasons, make this interest known. Read the catalogues well enough to ask the interviewer pointed questions about his or her school. You may use part of the interview time for gathering more information.

#### What if I am rejected from all schools to which I apply?

This is a difficult situation which calls for a reassessment of your desires and credentials. Many people never get into medical school; on the other hand, some make it the second or third time around.

Talk with any member of the Health Careers Committee or someone affiliated with medical school admissions about why you did not get admitted. They may help you pinpoint your weaknesses. The solution may be simply to take an extra year of science courses or to get a medically related job.

If you decide that you still want to go to medical school, then apply again, including less competitive schools on your list. Apply to your state medical college(s). During your free year you might make yourself a stronger applicant by the following:

1. Do graduate work in science, especially if your record is weak. One strategy would be to take advantage of the fact that most medical schools have two or three vacancies in the second year due to attrition. If you take graduate courses covering the same material as the first year of medical school (biochemistry, histology, microbiology, biostatistics, genetics, etc.) then you can apply for advanced placement into the second year at a number of medical schools. If the admissions committee objects because you lack a particular course (usually anatomy), tell them that you will take it during the summer at one of the medical schools which offer such a course.
2. Retake the MCAT if you can improve your scores.

3. Some voluntary or part-time health services experiences might strengthen your application. This year is a chance to both test and demonstrate your motivation. Remember, being rejected by some medical schools does not mean that you are incapable of becoming a doctor. There are many reasons why you may have bad luck one year and success the next.

During this year you should also recognize that once again you may not be accepted. Therefore you should be developing alternate career plans.