

**REPORT OF THE ACADEMIC PROGRAM REVIEW PANEL
ON THE
SCHOOL OF PHARMACY
MEMORIAL UNIVERSITY OF NEWFOUNDLAND**

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INTRODUCTION

An external review of both the undergraduate and graduate programs in the School of Pharmacy was conducted with an on-campus visit during the period June 6-8, 2002. The Review Panel members included John Bachynsky (Faculty of Pharmaceutical Sciences, University of Alberta), Linda Suveges (College of Pharmacy and Nutrition, University of Saskatchewan), David Heeley (Department of Biochemistry, MUN) and Sandra LeFort (School of Nursing, MUN). Prior to the site visit, the Panel was provided with a complete package of detailed information, including the School's Self-Study Report, previous evaluations (including the Report of the CCAPP On-Site Review) and relevant background information.

The Panel was impressed with the organization of the site visit and with the documentation provided. During the site visit, the Acting Director of the School, the members of faculty and staff, students, preceptors, and all others interviewed were cordial, helpful and appropriately candid. It was apparent that everyone was genuinely committed to using the review process to enhance the School and its programs. It should be noted that this was the second review of the School in less than a year - they also participated in an accreditation review of the undergraduate program by the Canadian Council for the Accreditation of Pharmacy Programs (CCAPP) in September, 2001. The Panel commends them for their ability to prepare for two major reviews in a short period of time.

The sections of the following report coincide with those described in the "Procedures for the Review of Units and Programs". Major recommendations are highlighted and priorities listed in the conclusions to the report.

The major finding of this review is that **the School of Pharmacy and its programs are not viable. A decision must be made whether to discontinue the undergraduate program or to provide adequate resources to maintain a program that meets national standards.** The reasons behind this finding are:

1. lack of a Director has prevented a process of direction and planning.
2. lack of linkages and support from the Health Care Corporation of St. John's has been a major impediment in the operation and development of the School.
3. the School's physical space is inadequate for the undergraduate and graduate programs to survive, let alone grow and develop.
4. lack of an updated curriculum has made it difficult, if not impossible, to determine the resource needs of the undergraduate program based on an outcomes-based curriculum which meets recognized standards.

5. the experiential component of the undergraduate program is excessively long and needs to be shortened and restructured to meet recognized educational standards.
6. lack of a research plan has meant that it has been difficult, if not impossible, to establish the direction and size of the research program, especially for graduate student enrollment.

UNDERGRADUATE PROGRAM

The School of Pharmacy was established in 1986 and graduated its first class of graduates from the baccalaureate program in 1990. At first, the program was designed as a "1 + 4" program with one pre-Pharmacy year and four years in the Pharmacy program. In 1991, this was changed to two pre-requisite years and three Pharmacy years, presumably due to the School's inability to recruit and retain sufficient faculty to offer the four-year program. All other Pharmacy programs in Canada are "1 + 4" programs.

From its inception, the Pharmacy program has included a significant number of weeks of structured practice experience. The number of weeks of studentship (structured practice experience between years one and two and two and three) was increased to its present level of 24 weeks in 1994. Students also complete 12 weeks of "clerkship" in their final (third) year. The number of weeks of structured practical training is greater than that in other Canadian Pharmacy programs; however, the 24 weeks of studentship is similar to internship requirements in several other provinces where the provincial regulatory authorities determine what is required before licensure to practice. The 12 weeks of clerkship in the final year meets the minimum time required by accreditation standards; however, the clerkship focuses only on one practice setting (institutional care) and, therefore, does not meet the accreditation requirement for breadth of training.

The School of Pharmacy has participated in two accreditation reviews since its establishment. After an initial site visit in 1996 and subsequent submission of a strategic plan, the Pharmacy program received full accreditation status for the period 1997-2001, with an extension to 2002 because changes to the directorship required more time for the School to prepare for a site visit.

The On-site Evaluation Report from 1996 detailed many areas where the program failed to meet the standards expected of an accredited pharmacy program in Canada. Unfortunately, the Accreditation On-Site Evaluation in September 2001 indicated that little progress had been made toward meeting accreditation standards. The evaluation determined that only two of 25 standards were met: Student/Faculty Relationship and University Library Resources. The other standards were either not met (4) or partially met (18)¹; one standard was not evaluated (Responsibilities of Faculty Administrators). As a consequence, the Pharmacy program has been granted full accreditation status for only two more years (2002-04) with the expectation that an Interim Report be submitted in April of 2003, detailing the progress made in dealing with the deficiencies outlined, and that another site visit be scheduled for the fall of 2003.

Despite the deficiencies outlined, the Review Panel noted that MUN Pharmacy graduates are very successful in passing the Qualifying Examinations of the Pharmacy Examining Board of

¹ The classification of "partially met" indicates substantial deviation from the accepted standard.

Canada, and that they are therefore able to apply for licensure in other provinces besides Newfoundland. Employers are also actively pursuing MUN graduates for employment in Newfoundland and elsewhere in Canada. The Panel credits the dedication of students, faculty, teaching and support staff, and preceptors who have managed to ensure that graduates are well-prepared for entry into practice.

Nevertheless, the Review Panel agrees with the results of the CCAPP Accreditation Review. The delivery of the current program is untenable in the long term (see other sections of this report). Therefore, if the program is to continue, it must meet established accreditation standards so students may participate in the national licencing examinations needed for registration as pharmacists in Canada, and continue to be successful in these examinations. Based on the historical isolation of Newfoundland pharmacists due to educational standards that were not accepted by the other provinces of Canada, anything less than full national equality would not be acceptable to the profession. The Panel therefore recommends the following:

Undergraduate Program Recommendations

Recommendation 1: Curricular revision of the pharmacy program should be undertaken immediately, for implementation in September 2003. The program should be outcome-based and should be linked to the entry-to-practice competency statements of the National Association of Pharmacy Regulatory Authorities (NAPRA). A sequence of courses leading from orientation to graduation needs to be set out in a logical and progressive manner. This program should prepare the graduates for practice in various sites, but especially in community and institutional practice. The program revision should be implemented in the fall of 2003. (Recommendations about the resources required to offer such a program are described elsewhere in this Report.)

Recommendation 2: The Pharmacy program should be restructured to be a “1 + 4” program. This would allow for the inclusion of several topic areas which are currently missing from the academic program, for earlier exposure to practice, and for more appropriate sequencing of learning opportunities for students (for example, therapeutics should be spread out over several years.)

Recommendation 3: External consultation should be used to facilitate the curricular revision. Several Canadian Pharmacy programs have completed curriculum revisions and are offering outcomes-based curricula. Faculty from these schools could provide the needed expertise to complete the Pharmacy program revision in a timely fashion. Because the curricular revision is vital to ensure viability of the program, the University should provide whatever resources are needed to complete the revision.

Recommendation 4: The curricular revision should include a review of the experiential program. Accreditation Standards require early and continued structured practice experiences in the educational program, and exposure to various sites and types of practice. Although the current program includes a great number of weeks of experience, most students do not receive training in hospital pharmacy practice, nor is there an appropriate progression in depth and breadth of experience.

An orientation program for students should precede their training and make clear their role and responsibility as well as the teaching role of the preceptor. Standards of behaviour, including patient confidentiality need to be stressed.

The “studentship” experiential program should be reduced to four weeks of focussed training under a qualified preceptor. The teaching objectives should be clear and linked to the curriculum. These experiential blocks should be provided to each student in both community and institutional settings. As part of the educational program, students should not be paid during these experiences. However, additional training may be included as part of the registration-for-practice process, regulated by the pharmacy licensing organization; these experiences may involve payment for students’ work.

The Panel also recommends that the 12 weeks of “clerkship” in the final year should include a 6-week community practice rotation as well as a 6-week rotation in an institutional site (currently students participate in two 6-week institutional clerkships). This will alleviate the strain on institutional sites and faculty-preceptors (described later in this Report), and will provide appropriate advanced training in the delivery of pharmaceutical care in community practice. A mandatory rural practice experience should also be considered for all students.

Preceptor training and an updated manual with learning objectives need to be implemented with the revised program.

Recommendation 5: The School of Pharmacy should have formal, signed agreements with the Health Care Corporation of St. John’s (HCCSJ) and other regional health authorities to provide for appropriate provision of practice experiences for pharmacy students. The hospital clinical rotations require strong support from the Health Care Corporation of St. John’s and other hospital facilities throughout the province so students can take rotations in an acute care facility with highly qualified practitioners. An appropriate agreement needs to be developed and signed between the School and the HCCSJ, as well as with other health districts.

Recommendation 6: The revised curriculum should use varied teaching and evaluation methods which coincide with the desired learning outcomes. For example, students should have opportunities for self-directed learning to encourage the development of lifelong learning skills, and practice skills should be evaluated in an appropriate manner (e.g., using standardized patients to assess medication counselling skills).

FACULTY RESEARCH AND SCHOLARSHIP

Faculty in the Pharmaceutical Sciences have established active research programs in several areas. The School has received \$1.6 million in research funding over the past six years. This record is outstanding, given the small number of faculty involved. Despite these successes, the Review Panel feels that the School needs to develop a plan for its research activities.

Historically, research activities have developed according to individual faculty interests or the availability of funding, with little attempt to determine a research focus for the school or whether the research activity can be accommodated in the current facilities. Some research areas (e.g., pharmaceuticals) appear to lack sufficient space for the personnel and equipment required.

Recommendation 7: The School should develop a Research Plan. This Plan should encompass all faculty and should be related to overall planning initiatives. Planning should consider the number and type of faculty needed to offer the undergraduate program, faculty expertise and the types of research that will be conducted in the School. (For example, due to space restrictions, it may not be possible to conduct research using radioisotopes.) This Plan should also include space and equipment requirements, and a realistic assessment of the number of graduate students who could be supervised and supported.

Recommendation 8: The scholarly work of the School should be more closely linked to provincial needs. There needs to be a link between the health issues in the province and the research program. A diverse rural population and rapidly changing demographics provide a challenge for the Pharmacy program. For example, patterns of drug use and their cost need to be examined to make more effective use of health resources. Research in pharmacy practice and drug management should be encouraged.

Clinical/Pharmacy Practice Faculty Development

Use of medication is an area of growing importance. There is an intensive use of medication in acute care and this requires a high level of expertise to gain maximum benefit and to justify the high cost. Monitoring of patient care requires highly trained clinical pharmacists. To maintain this system requires the input of academic staff. They are a valuable resource, and, to be effective, need to be actively involved in research.

The research efforts of the clinical faculty are in the early stages of development. It is laudable that any research is able to be carried out by this group given their high teaching load with regard to clinical supervision in the winter semester. This group of faculty have published in practice-related journals and/or given scholarly presentations at conferences, and they appear to be actively involved in a variety of professional organizations. Two clinical faculty are involved in interdisciplinary research and two hold clinical appointments in addition to their teaching and research responsibilities. However, this group has generally not had the time to attract funding from external sources for research or support of graduate students.

In this review, the Review Panel heard a number of suggestions/recommendations that could improve the situation for the clinical faculty. The Panel therefore recommends the following:

Recommendation 9: A mechanism should be developed which recognizes the teaching load involved in the supervision of students in clerkships. A more equitable distribution of available time for teaching and clinical supervision versus research/scholarly work would improve the capacity of the clinical faculty group to do applied research that may directly impact pharmacy clinical services and health care in the province (e.g., what pharmacy clinical services are needed in rural Newfoundland?; what strategies are effective in improving pharmacy care?, etc.) as well as provide role models to students regarding clinically-based research.

GRADUATE PROGRAM

The graduate program in the School of Pharmacy began in 1991 with the introduction of a Master of Science (M.Sc.) program. Eleven students have graduated from the program; five of these went on to Ph.D. programs elsewhere. An additional seven students left before completing the M.Sc. (two transferred to Ph.D. programs elsewhere). At present, there are six graduate students in the M.Sc. program and one student who has recently transferred to the Ph.D. program, which was approved in 1999.

The graduate program for the size of the School is very productive. Although there is some difficulty in presenting graduate level courses the students do acquire sufficient knowledge to conduct their research. It may be helpful to have more joint supervision or collaborative programs to enhance the student's access to research direction.

The Review Panel was aware that the School of Pharmacy was instituted so that it could offer an undergraduate pharmacy program which prepares graduates for pharmacy practice. However, the quality of teaching and the scientific orientation of the students is dependent on faculty having active research programs which should include graduate students. Therefore the Review Panel makes the following recommendations:

Graduate Program Recommendations

Recommendation 10: Consideration should be given to suspending enrollment in the graduate program until such time that the Research Plan has been formulated and the appropriate number of students for the limited research space has been determined. The number of graduate students is large given the size of the unit. The shortage of dedicated research areas, specifically bench space for experimentation, has led to a near-crowding

problem in the pharmaceuticals laboratory. On the grounds of physical safety, the Panel recommends that no additional personnel be located in these quarters, and that an assessment be made as to the appropriate number of people that can be accommodated safely.

Recommendation 11: Policies and procedures for graduate programs should be developed within the School. For example, the Calendar is quite clear that regular advisory committee meetings should be held. However, it was apparent that some graduate students did not even know who was their advisory committee. Such meetings help ensure that students are on-track and on-time with the activities and requirements for completion of their programs. Because there appear to have been major inconsistencies in how graduate programs are administered in the School, the Research Plan should include an objective which will lead to the development and implementation of policies and procedures for the graduate program and its administration within the School.

Recommendation 12: The graduate student stipend should be raised to the NSERC/CIHR level. To ensure that high quality graduate students are recruited and retained, it is imperative that they receive appropriate support. The Panel is aware that the School provides some funds for graduate student stipends, but these do not appear to be sufficient to provide an appropriate level of support (stipends are composed of \$7,000 from the School and \$7,000 from Graduate Studies). The Panel was uncertain to what extent individual supervisors contribute to graduate stipends. The Graduate Studies Committee should develop policies and procedures for the support of graduate students.

Recommendation 13: The Graduate Studies Committee should include at least one faculty member from the Pharmacy Practice/Clinical Pharmacy area. At present this Committee appears solely made up of faculty from the Pharmaceutical Sciences and therefore, admissions to graduate programs and other matters do not receive the appropriate broad-based review that should occur in any graduate program.

Recommendation 14: Formalized relationships should be established between the School and other departments where graduate students may access necessary equipment, and funds should be made available for necessary repairs. The School is well-served in terms of computing facilities and is near to the Health Sciences Library. However, the School has limited space to accommodate the instrumentation required for some research activities in the Pharmaceutical Sciences. This has necessitated the use of extra-departmental equipment. If this practice is to continue, a faculty-supervisor should first establish an appropriate agreement with the department where such equipment is located, and should be familiar with the use of such equipment. The School should also establish appropriate policies, procedures and funds to cover any incurred damages to extra-departmental equipment when it is being used by Pharmacy graduate students.

Recommendation 15: The offerings of various graduate courses should be regularized. To ensure that students can finish their programs in a timely fashion, the Research Plan should include some goals which will outline which graduate courses should be offered and at what intervals (for example, each faculty member should offer a graduate course every two years).

FACULTY AND STAFF

Leadership

In the past five years, the School of Pharmacy has had three changes in its Director, and has had an Acting Director for much of that time. While the individuals involved have done the best job possible in the circumstances, such a lengthy period of instability means that the School does not have an active process for planning or establishing its future direction. The last three years have been particularly difficult for the School because the position of Associate Director was not filled when Dr. Hensman became the Acting Director.

Recommendation 16: The search for a Director should be aggressive and immediate.

Appointment of a Director for the School should be of the highest priority. Until a Director is appointed, the School should receive appropriate resources and support to accomplish its curricular review and planning activities. This may mean the appointment of an acting Associate Director or other support staff and faculty to make sure that appropriate planning is initiated and the undergraduate and graduate programs are maintained and improved.

In addition, the current organizational position of the School needs to be reviewed. Ideally, it should have Faculty status. If this is not possible, its relationship to the other health faculties and the university administration should be clearly set out with a goal of Faculty status at some future time.

Recommendation 17: The School should explore alternate methods of operation that would reduce the administrative burden. The Panel does not have specific suggestions in this area, but would encourage an exploration of all possible avenues within the University.

Complement of Faculty and Teaching Staff

As noted in the self-study, the School has been challenged over the years to recruit and retain faculty. Perhaps related to the frequent changes in leadership, the School has also neglected to communicate with University administrators the extreme need to ensure that vacant faculty positions are filled. Consequently, it appeared to the Panel that some vacancies were never advertised, and there has been a net loss of at least two faculty positions in the past five years.

The current faculty numbers are, therefore, inadequate for the required teaching load in both the undergraduate and graduate programs. Indeed, the current undergraduate curriculum is based more on available resources than on program requirements. There is a need for more depth in key areas, with alternate teachers available when faculty are on leave or are away. Currently, the program is severely affected when a faculty member is absent. This places an enormous burden on other faculty and one that is unjustified.

Recommendation 18: The complement of faculty should be reviewed and increased. The number of faculty required and their areas of expertise will depend on the curriculum adopted and the research plan that is prepared. Until these documents are prepared, no additional permanent staff should be employed.

It is apparent that the number of clinical or pharmacy practice faculty should be increased, and their areas of practice should be such that they can effectively teach in the undergraduate program, provide clinical services, and participate in scholarly activities. If possible, clinical faculty should not be directly responsible for supervision of students in clerkships. Increasingly, pharmacy practice should be taught by pharmacy practitioners under the general direction of the academic staff. For example, clinical faculty should establish educational goals for structured practice experiences and ensure that these goals are reached, but students should be supervised by on-site preceptors.

In addition, several key areas of the pharmaceutical sciences may need staff for both the undergraduate and graduate programs. These areas are: pharmacokinetics, medicinal chemistry, pharmaceutics and drug metabolism-toxicology. It would be beneficial if the School could call upon at least two individuals in each area to ensure appropriate coverage during faculty leaves or other circumstances. Other science areas such as pharmacology should be taught by the Department of Pharmacology (often located in the Faculty of Medicine) as is done in most other Pharmacy schools. Where faculty cannot be hired as full-time tenure track faculty, then joint or adjunct appointments, or other arrangements such as non-salaried teaching staff should be employed.

Greater use should also be made of academic staff hired for the academic year to teach pharmacy practice. These staff members should be treated as full-time staff with an office, staff benefits and reasonable teaching load.

Drug Information Centre

The Drug Information Centre plays an important role in the School of Pharmacy. It is also very helpful to hospital staff, physicians, community pharmacists and others in the province. These stakeholders should share in the support of the Centre. Although the Drug Information Centre is important to the educational program, the School is not in a position to completely support such an ambitious undertaking. Funding for the centre is so unstable that staff are hired on a month-to-month basis. This creates a state of constant stress and means that there is always a danger that an important element in the undergraduate program will not be offered.

Recommendation 19: The University, in partnership with the School, should actively pursue stable and consistent financial support for the Drug Information Centre from a variety of stakeholders. In other provinces, drug information centres are established within health care facilities, or are funded through joint partnerships with government, professional associations, and regional health care centres. Now that the Centre is established in the School of Pharmacy at MUN, it is appropriate to leave it there and to have it supported by a partnership consisting of the University, the Health Care Corporation of St. John's, the provincial pharmacy association, the provincial medical association, and other stakeholders.

Support Staff

The School's support staff have remained essentially unchanged over the past seven years. Staff members do a commendable job, despite cramped quarters and a heavy workload. They are obviously dedicated to the School and its faculty and students.

Recommendation 20: The complement of administrative support staff should be reviewed with a view to increase and stabilize positions. Recommended changes to the undergraduate program and number of faculty will necessitate a review of the number of support staff and the activities expected of them. As discussed under the resource section of this report, additional space is urgently required in all parts of the School's operations, including space for its support staff.

COMMUNITY SERVICE AND UNIVERSITY CITIZENSHIP

As noted in the background documentation, faculty are involved in making presentations and other activities in the university community, the city of St. John's and the province. The Review Panel has no specific recommendations about these areas. However, given that all faculty are stretched to their limits with teaching and university-based activities, extensive community service commitments should be minimized, until such time as the recommendations made in this Report are implemented and the School is on more stable ground.

UNIVERSITY SUPPORT

Space

In addition to a permanent Director and appropriate additions to the faculty complement, the most critical deficiency facing the School of Pharmacy is space. The total space available is inadequate for a pharmacy program. If the Pharmacy program is to remain viable, additional space will have to be made available for both the undergraduate and graduate programs. In the short-term, the School requires immediate renovation to maximize the use of available space.

Recommendation 21: A comprehensive evaluation of space within the School of Pharmacy should be undertaken in conjunction with the curriculum revision and the research plan to ensure that both the undergraduate and graduate programs can be offered in an effective manner. While the specific nature of teaching space will not be known until the curriculum review is completed, it is clear that seminar space is needed in the School of Pharmacy area, practice laboratories should be more representative of the practice sites with counselling areas, and classrooms may have to be enlarged to accommodate increased class size in the future.

Sufficient space is a vital concern. If it is NOT provided, a smaller space can be used more intensively but this will require more staff, a curriculum that is self-contained, and scheduling of classes morning, afternoon and evening. This is a substantive commitment and would require a duplication of staff to compensate for the lack of space.

The Drug Information Centre needs more space to function effectively. There is not enough room for books nor space for reviewers or students to use the resources available. There is a need for a resource centre and reading room for students. This should contain current professional journals, information from pharmaceutical firms, surveys, and other resources, as well as computer access to databases.

Office space for faculty and academic staff should be available so that each staff member has an office where confidential communication can be performed. At present, the laboratory coordinator has a desk in the School's Office, a location which is inappropriate for student interaction. It also means that the work area for support staff is very cramped, sometimes making it difficult for them to work on confidential tasks.

Outreach programs will result in more visitors to the School and require a waiting area and meeting rooms. These are currently inadequate.

The clinical faculty group do not need extensive research facilities; however, if they developed a vibrant applied research group they would need a space for computers, research assistants, and graduate students.

Recommendation 22: If additional space is unavailable, then the undergraduate laboratories should be renovated and reconfigured. Currently, the professional practice laboratory is too small, and the pharmaceuticals laboratory is too large. A more efficient use of these two spaces would be to renovate the whole area into two laboratories (a professional practice lab and a pharmaceutical sciences lab), each of which would hold 20-25 students. A single class could then be accommodated in two lab sections, and these could be scheduled concurrently so students would be in one and then switch to the other the next day. Both the laboratories need to become flexible spaces so that they could accommodate various activities (for example, the science lab could provide opportunities for analytical procedures and also for pharmacokinetic modelling).

The pharmacy practice area will need dispensing counters, computer stations, books and files, a counselling counter and chairs, video recording equipment and monitors, medications, health supplies and a central control room with equipment and teaching resources. Virtually none of this is now available for integrated teaching. Since students will be assigned to practice sites early in the program it is important that they understand the basic process in a dispensary and are comfortable in performing their assigned roles.

PLANS, GOALS AND RESOURCE ALLOCATION

The principles underlying the Strategic Framework of Memorial University endorse the University's commitment to academic excellence, to providing equitable resource allocation, and to taking into account the needs of the province to shape decisions. Focussing these principles on the stated goals: achieving the full potential of professional schools, advancing knowledge through both basic and applied research, enhancing graduate study and teaching and its necessary link to research and undergraduate programs, and a policy of faculty renewal are all key to making sure that the School of Pharmacy, in the future, will be a vibrant, responsive, intellectually productive unit that provides the highest quality undergraduate and graduate education for its students and continuing education for pharmacy professionals in the province.

Resources for a viable program are necessary if the program is to continue. The numbers of faculty and teaching staff for the undergraduate program are inadequate, space for teaching and research is inadequate, clinical teaching sites are marginal and there are too few administrative support staff. There are also concerns regarding the safety of laboratories and teaching areas. Finally, the School is not able to take advantage of opportunities in the community and rural areas due to the pressures of teaching. Organizational slack is necessary to initiate new initiatives and programs. In short, a viable program is one that enables the School to make a substantive contribution to the province, not only in graduating students but also in scholarly work, research and community service.

SUMMARY AND CONCLUSIONS

The School has dedicated faculty and staff who are working excessive hours to keep the program alive. We do not believe that the current activities are viable. There is a need for a commitment of more resources or a phasing out of the program.

The Undergraduate program is the key area and it needs a systematic review with a view to establishing the kind of program to be implemented and the resources needed to achieve this goal. This requires an experienced Director. The strength of the program is in the experiential program. However, it needs to be revised and linked more closely to educational objectives.

The graduate program appears to be too large for the physical resources and number of supervisory staff. A plan for future development is needed.

The Review Panel has made a number of recommendations which we feel are vital to ensure the survival of the School of Pharmacy at Memorial University of Newfoundland. Those with the highest priority are included in **bold**.

- Recommendation 1:** **Curricular revision of the pharmacy program should be undertaken immediately, for implementation in September 2003.**
- Recommendation 2:** **The Pharmacy program should be restructured to be a “1 + 4” program.**
- Recommendation 3:** **External consultation should be used to facilitate the curricular revision.**
- Recommendation 4:** **The curricular revision should include a review of the experiential program.**
- Recommendation 5: The School of Pharmacy should have formal, signed agreements with the Health Care Corporation of St. John’s (HCCSJ) and other regional health authorities to provide for appropriate provision of practice experiences for pharmacy students.
- Recommendation 6: The revised curriculum should use varied teaching and evaluation methods which coincide with the desired learning outcomes.
- Recommendation 7:** **The School should develop a Research Plan.**
- Recommendation 8: The scholarly work of the School should be more closely linked to provincial needs.

- Recommendation 9: A mechanism should be developed which recognizes the teaching load involved in the supervision of students in clerkships.
- Recommendation 10: Consideration should be given to suspending enrollment in the graduate program until such time that the Research Plan has been formulated and the appropriate number of students for the limited research space has been determined.**
- Recommendation 11: Policies and procedures for graduate programs should be developed within the School.
- Recommendation 12: The graduate student stipend should be raised to the NSERC/CIHR level.
- Recommendation 13: The Graduate Studies Committee should include at least one faculty member from the Pharmacy Practice/Clinical Pharmacy area.
- Recommendation 14: Formalized relationships should be established between the School and other departments where graduate students may access necessary equipment, and funds should be made available for necessary repairs.
- Recommendation 15: The offerings of various graduate courses should be regularized.
- Recommendation 16: The search for a Director should be aggressive and immediate.**
- Recommendation 17: The School should explore alternate methods of operation that would reduce the administrative burden.
- Recommendation 18: The complement of faculty should be reviewed and increased.**
- Recommendation 19: The University, in partnership with the School, should actively pursue stable and consistent financial support for the Drug Information Centre from a variety of stakeholders.
- Recommendation 20: The complement of administrative support staff should be reviewed with a view to increase and stabilize positions.

- Recommendation 21:** **A comprehensive evaluation of space within the School of Pharmacy should be undertaken in conjunction with the curriculum revision and the research plan to ensure that both the undergraduate and graduate programs can be offered in an effective manner.**
- Recommendation 22:** **If additional space is unavailable, then the undergraduate laboratories should be renovated and reconfigured.**