

# Two-Year Progress Report

## Pharmacy (MSc, PhD)

### March 2020

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#### **Background**

The self-study document for the cyclical review of the graduate programs (MSc, PhD) in the School of Pharmacy (SOP) was submitted in June of 2016. The external review and site visit took place on November 7-8, 2016. This response will specifically address the recommendations from the external reviewers, which were detailed in the Final Assessment Report.

#### **Progress on Implementation Plan**

The following section briefly describes the status of each recommendation. The updated Implementation Plan based on the status of the recommendations and our progress thus far is presented in Table 1.

#### **Recommendations**

1. We recommend the School to be pro-active and reach out to the Faculty of Science to identify Canadian Foundation for Innovation (CFI) opportunities and secure funding allocations.

*Status: in progress*

Details: The SOP was successful in receiving a CFI allocation that allows us to submit a CFI application for the Fall 2016 competition. This CFI application was not successful. In September 2017, our newest faculty member brought a CFI to the University of Waterloo and has used it for development of a dedicated computing infrastructure for big data analytics in health outcomes. We will continue to examine this as a viable funding mechanism.

2. We recommend use of a shuttle system or allocation of transportation funds to individual graduate students to facilitate transport of supplies and movement of students between the main campus and the School

*Status: completed*

Details: The SOP has an arrangement with a local taxi company to transport graduate students to the main campus for academic purposes at no charge to the students. In addition, all UW students have access to Grand River Transit (this service is included in the graduate student fees for full-time students, allowing them access to the transit system at no additional

cost), which operates multiple bus routes that stop at both the Pharmacy building and main campus, providing excellent transportation options to graduate students. In 2019, a new light rail transit system began operation within the Region of Waterloo, with stops right outside the Pharmacy building and on the main campus; this provides even more transportation options for students.

3. We recommend that the University and School of Pharmacy think about a sustainable budget plan that can guarantee the stipend for at least 4 years (during the funding cohort) for PhD students and 2 years for MSc students in both streams should the research funding of the supervisor face trouble in renewal.

Status: *completed*

Details: Per their letter of offer, all students are guaranteed full funding for the duration of their studies (2 years – MSc; 4 years – PhD). In the event that the supervisor faces financial difficulties, the School must supplement. The School has implemented a process for approving bridging funding for these situations.

The new MPHARM is a revenue-generating endeavour through tuition. No stipend is offered to the students thus no guaranteed stipend is needed.

4. We recommend that the School reaches out to the Graduate Office of the Faculty of Science to explore alternative funding strategies and models for Graduate student support.

Status: *completed*

Details: The Faculty of Science offered [Graduate Student Incentives](#) for incoming domestic PhD students in Fall of 2018 and the SOP benefitted from this with its largest intake of students to date (n=10). Further, we continue to be engaged with the Faculty of Science to explore additional opportunities as they arise.

5. Development of a recruitment strategy for attracting excellent, prospective graduate students is strongly recommended.

Status: *in progress*

Details: Our [website](#) is one of the first places a prospective student is likely to go. In Fall 2017, we redesigned the website to ensure that all resources were visible, such as the student handbook which is now complete.

The Faculty of Science is also active in this area with a Grad Open House event being delivered in both 2017 and 2018; both of which Pharmacy faculty attended and presented. Our faculty have also had recruitment booths at field-specific national and international conferences and

we are actively discussing options for portable recruitment brochures (e.g., a postcard) for faculty to take to conferences.

We have recruited five students to our graduate program from the PharmD program. We plan to continue actively recruiting these students through in-class presentations and independent-study elective courses.

In addition, the School has added three new research intensive faculty in the past couple of years and these faculty will attract new graduate students. As a result of new hires in data-driven fields, the needs of faculty have changed significantly in the past 5 years. In response, the School built the Health Services & Applied Research Lab housed in the Pharmacy building. This space features a secure entrance, graduate student offices, patient counselling and examination rooms, a meeting room, and a controlled-entry computer lab with dedicated workstations. The addition of this lab will help our faculty to attract and provide a specialized training space for new graduate students.

6. The School should focus on developing (or offering on a more regular basis) additional graduate courses especially in the clinical and pharmacy practice areas.

*Status: in progress*

Details: Since the time of the review, the School of Pharmacy (SOP) has developed a proposal for a Master of Pharmacy in Advanced Pharmacy Practice (MPHARM). The program is an advanced professional graduate-level program that will train advanced pharmacist practitioners for careers in clinical practice, education and clinical research. The program includes required and elective courses, a clinical practicum and completion of a non-thesis research project. Full-time students will be expected to complete the requirements in six semesters. The program will predominantly be delivered in-person with an emphasis on problem-based learning as the pedagogical model in the required courses. The clinical practicum will take place in a variety of health care settings including both institutional and primary care sites and will not use the co-op model. The students will pay higher fees consistent with those charged for other professional pharmacy programs in Canada.

The program proposal was developed throughout 2017 with internal and external stakeholder input and approved at School of Pharmacy Council on May 24, 2018. Ministry approval was given in summer of 2019 and the first cohort will begin in Fall 2020.

The required courses in this program include:

**PHARM 651: Advanced Principles of Medication Management 1** – Students will learn advanced principles of drug action, pharmacodynamics, pharmacogenomics,

pharmacokinetics and pharmacotherapeutics and will apply these principles to identifying and resolving drug-related problems in a variety of therapeutic areas. A problem-based learning approach will be used to maximize student learning.

**PHARM 652: Advanced Principles of Medication Management 2** – This course further expands the skills and knowledge developed by students in Advanced Principles of Medication Management 1.

**PHARM 653: Methods in Clinical and Applied Research** - This course will provide an overview of common research methods used to address questions in clinical and translational research. Research ethics and responsible conduct of research will be addressed. The course will also cover basic concepts in successful grant writing.

**PHARM 654: Critical Appraisal and Evidence-based Practice** – Using a journal club format, students will identify and analyze papers from the primary literature. Skills related to critical appraisal and evidence-based practice will be developed. Students will also have the opportunity to develop communication skills related to presenting scientific literature.

**PHARM 655: Physical Assessment and Clinical Laboratory Testing** – Fundamental skills of physical assessment and the basic understanding and interpretation of diagnostic testing, imaging and clinical laboratory tests relevant to monitoring the effects and adverse events associated with the use of medications will be covered (lecture and laboratory).

**Biostatistics Requirement** – Students must complete an approved course in biostatistics or quantitative data analysis offered in the SOP or other departments at the University of Waterloo.

In addition to the courses that will make-up the MPHARM program, additional courses are being developed for the MSc and PhD programs. **PHARM618: Pharmacoeconomics** has been developed and delivered as a Special Topics course as it makes its way through the approval process within the University. Further, there have been ongoing face-to-face discussions between our pharmacoepidemiology, health services research and outcomes and pharmacoeconomics SOP faculty and colleagues in Statistics & Actuarial Science and School of Public Health & Health Systems to plan for further opportunities for cross-listing courses in shared areas of interest. Cross-listing has been successful for PHARM614-STATS814: Systematic Review and Meta-Analysis and we will use this as a benchmark.

Further, in September 2017, the School hired another faculty member in the area of health outcomes such that clinical pharmacy, pharmacoepidemiology and social and administrative science faculty now represent close to 50% of the SOP full-time research faculty. With the implementation of the MPHARM, our collaborations with other University Departments and our now full complement of research faculty, course offerings will increase in quantity and consistency.

7. The self-study asked for advice around building industrial partnerships and incorporating experiential learning into the graduate program. Reviewers recommended “... a duration of 4-6 months for this program towards the end of PhD studies upon completion of experimental phase of the PhD thesis and before the thesis defence when all program requirements are completed.”

*Status: in progress*

Experiential education in graduate studies is within the new University Strategic Plan 2020-2025 as well as in the School of Pharmacy Strategic Plan 2020-2025. While this is something the SOP is interested in implementing, we are awaiting a University or Faculty level framework to work within. Neither the University nor the Faculty currently have such a framework however the SOP will be supportive of such an initiative.

*Explain any circumstances that have altered the original implementation plan*

The original implementation plan has been used by the School as a guidance document in the past 2 years. The major item identified by the site visit team, which was the lack of clinically-oriented courses, is addressed with the development of the MPHARM program and therefore the availability of five additional clinically-oriented courses that are available to all graduate students (MPHARM, MSc, PhD) in the School. Lesser items have also been reviewed and acted upon as presented in this report. There have been no extenuating circumstances hindering our ability to follow through on the implementation plan.

*Address any significant developments or initiatives that have arisen since the program review process, or that were not contemplated during the review*

The SOP is in the process of developing and implementing an extensive Programmatic Assessment Plan. The Assessment Plan is a working document to drive a quality assurance process in all areas of the School (PharmD, MSc, MPHARM and PhD programs, staff and faculty development, student services) and is required by the PharmD accreditation body, the [Canadian Council for the Accreditation of Pharmacy Programs \(CCAPP\)](#). The graduate programs will have a functioning plan and the SOP will begin implementing this plan in 2020.

The planning and building of the Health Services & Applied Research Lab was a new initiative since the review. This lab addresses some of the needs of our faculty and graduate students who are engaged in clinical, quantitative health services or data-intensive research and provides a physical space for cross-faculty collaboration and graduate training.

**Table 1. Updated Implementation Plan**

|    | Recommendations                                                                                                                                                 | Proposed Actions                                                                                                          | Responsibility for Leading and Resourcing (if applicable) the Actions                                                                                  | Timeline for addressing Recommendations                                                                                                                                                                    |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | We recommend the School to be pro-active and reach out to the Faculty of Science to identify CFI opportunities and secure funding allocations.                  | Engage with Associate Dean, Research to identify CFI opportunities and SOP faculty to identify need                       | Associate Director, Graduate Studies and Research<br><br>Research Fellow                                                                               | <b>Ongoing.</b> The Research Fellow (Edginton) is active in the Faculty of Science Research Fellows group where this is regularly discussed.                                                               |
| 5. | Development of a recruitment strategy for attracting excellent, prospective graduate students is strongly recommended.                                          | Work with Faculty of Science on Faculty-wide recruiting strategies<br><br>Develop in house recruiting materials           | Associate Director, Research and Graduate Studies                                                                                                      | <b>Ongoing</b>                                                                                                                                                                                             |
| 6. | The School should focus on developing (or offering on a more regular basis) additional graduate courses especially in the clinical and pharmacy practice areas. | Secure approval for MPharm and enroll students<br><br>Continue discussions with other faculties re: cross-listing courses | Associate Director, Research and Graduate Studies<br><br>Hallman Director, School of Pharmacy<br><br>Associate Director, Research and Graduate Studies | <b>MPharm postcard created in Nov 2019</b><br><br>Formal approval given in summer of 2019<br><br><b>2019-2020:</b> Course development<br><b>Fall 2020:</b> First offering of courses<br><br><b>Ongoing</b> |

Date of next program review: \_\_\_\_\_

**2023-2024**

Date

Signatures of Approval:



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May 11, 2020

Chair/Director

Date

AFIW Administrative Dean/Head (For AFIW programs only)

Date

Robert P.  
Lemieux



Digitally signed by Robert P.  
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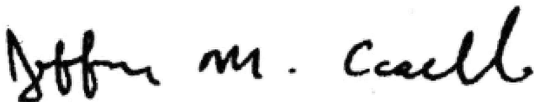
Faculty Dean

Date

**Note:** AFIW programs fall under the Faculty of ARTS; however, the Dean does not have fiscal control nor authority over staffing and administration of the program.

Associate Vice-President, Academic  
(For undergraduate and augmented programs)

Date



May 27, 2019

Associate Vice-President, Graduate Studies and Postdoctoral Affairs  
(For graduate and augmented programs)

Date

## Checklist for SUC/SGRC Reviewer Feedback Quality Assurance Office

**Two-Year Progress Report: Pharmacy**

**Name of Reviewer: Ana Ferrer**

**Date: 3/18/2020**

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### **Does the Two-Year Progress Report:**

- |                                                                                                                                                                    |                                                |                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|------------------------------------|
| 1. Clearly describe progress achieved on the various action items in the implementation plan?                                                                      | <input checked="" type="checkbox"/> <b>Yes</b> | <input type="checkbox"/> <b>No</b> |
| 2. Explain convincingly any circumstances that would have altered the original implementation plan?                                                                | <input checked="" type="checkbox"/> <b>Yes</b> | <input type="checkbox"/> <b>No</b> |
| 3. For items that are behind schedule, propose an amended implementation schedule that is reasonable and credible?                                                 | <input checked="" type="checkbox"/> <b>Yes</b> | <input type="checkbox"/> <b>No</b> |
| 4. Address significant developments or initiatives that have arisen since the program review process, or that were not contemplated by the program review process? | <input checked="" type="checkbox"/> <b>Yes</b> | <input type="checkbox"/> <b>No</b> |

### **General Comments**

**The report has adequately responded to the items raised by reviewers**