



Impacts from the implementation of a Novel Clinical Pharmacist Training Program in Changsha, Hunan Province, China

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Abstract

The Ministry of Health and Family Planning of the People's Republic of China issued a mandate to all hospitals to implement clinical pharmacy services by 2020. Implementation of clinical pharmacy services to provide pharmaceutical care is a priority. The Second Xiangya Hospital of Central South University in collaboration with the University of Alberta implemented a structured train-the-trainer program to train pharmacists to provide direct patient care in collaboration with physicians, to teach/mentor other pharmacists and students from Hunan province, and to conduct clinical pharmacy research. Following implementation of the program, the pharmacy department increased the number of clinical pharmacists, expanded the clinical pharmacy services, made changes to hospital policies, and received a financial award of five million renminbi (one million Canadian dollars) to support the department.

Significant statement: This is the first clinical pharmacy train-the-trainer program in China in collaboration with a university in Canada teaching clinical pharmacists how to provide direct patient care and to conduct clinical research. The program was well accepted by the hospital staff and administration. As a result of the changes implemented, the hospital was ranked as having the third best clinical pharmacy department in China.

Keywords: Clinical pharmacy; pharmaceutical care; pharmacy practice in China; hospital pharmacy; training program; pharmacy practice; China

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Background

The Ministry of Health and Family Planning of the People's Republic of China issued a mandate to all hospitals to implement clinical pharmacy services by 2020 [1]. The mandate requires all secondary hospitals to employ at least three full-time clinical pharmacists and all tertiary hospital to employ at least five full-time clinical pharmacists. They are to provide clinical pharmacy services to all patients. While the government of China has been providing support

for pharmacists to receive clinical pharmacy training overseas, most found it difficult to implement clinical pharmacy services back in China because of the enormous differences between the health care systems.

The Second Xiangya Hospital of Central South University (SXHCSU) is one of the top tertiary hospitals located in Changsha, Hunan, China. It has 5000 beds and serves on average 100,000 inpatients and more than two million outpatients a year. One of the



unique features of the teaching hospitals in China is the relationship with the universities. Among more than 3000 health care professionals, SXHCSU has more than 600 professors or associate professors with a joint appointment or with a teaching commitment with Central South University.

Like all leading tertiary hospitals in China, SXHCSU is exploring opportunities to implement a clinical pharmacy service to provide pharmaceutical care. Currently the pharmacy dispenses about 10,000 prescriptions for outpatients and more than 5000 prescriptions for inpatients in the hospital each day. There are more than 100 staff pharmacists, 15 clinical pharmacists, and more than 30 pharmacy technicians in the pharmacy department. Most of the clinical pharmacists have a doctor of philosophy degree in pharmacology or pharmaceutical sciences. Hence these pharmacists continue to conduct research in the laboratory. However, some of these pharmacists have spent 6–12 months in hospitals in North America to gain some understanding of clinical pharmacy services. In 2013 the Director of Pharmacy of SXHCSU was invited to the University of Alberta as a visiting professor. During his visit to Edmonton, he and a faculty member from the University of Alberta initiated a collaboration to assist SXHCSU in implementing a structured train-the-trainer program between April 2015 and May 2017 [2]. The goals of the program were to train pharmacists to provide direct patient care in collaboration with physicians, to teach/mentor other pharmacists and students from Hunan province about clinical pharmacy, and to conduct clinical pharmacy research.

Impacts from the train-the-trainer program

Practice of patient care

Since 2015 the clinical pharmacy department at SXHCSU has gained four additional clinical pharmacists in geriatrics, oncology, intensive care, and neurology.

Before 2015 the clinical pharmacists were focused on the antibiotics consultation service, with only eight clinical pharmacists in the pharmacy department. Now the pharmacists are able to care for patients in a holistic way. They are currently providing comprehensive pharmaceutical care to the patients in the hospital. This includes taking patient history and medication history, identifying actual and potential drug-related

problems, resolving drug-related problems, preventing potential drug-related problems, and monitoring drugs for efficacy and toxicity. They are able to assess and manage other medical conditions above and beyond providing consultations for use of antibiotics. In addition, the clinical pharmacists learned to address clinical policies that may not offer benefits to patients or may impede the clinical outcomes of patients. For instance, the hospital has a very high rate of false negative culture results. This made appropriate antibiotic selections very difficult. One of the clinical pharmacists investigated the cause for the high rate of false negative culture results. The reason is that the specimens do not reach the laboratory in the time recommended by the Center for Disease Control. On average, it took the specimens two to three times longer than recommended to be delivered to the laboratory. The department will present the findings to the leaders of the hospital in the hope of changing the policy on specimen delivery methods.

Currently, the department is attempting to minimize non-steroidal anti-inflammatory drug (NSAID)-induced renal insufficiency in perioperative patients. Because of the stigma and fear of opium and narcotic addiction, there is a reluctance to use opioids for pain control in perioperative patients. The clinical pharmacy leader identified and completed a patient record review. The results will be presented to the leaders of the hospital and eventually published. The goal is to encourage the hospital leaders to change the policy for opioid use in perioperative pain control and thus reduce the use of NSAIDs.

Beginning in January 2016 the department began to document clinical pharmacists' workload on a daily basis. Each clinical pharmacist documents his or her daily clinical interventions and the time spent on each intervention. The department will use the data from the workload documentation for quality assurance and will also present them to the leaders of the hospital. Moreover, the department will use the documentation data to support the addition of clinical pharmacists where needed.

To foster continuous learning for the clinical pharmacists, the department adopted "lunch and learn" sessions. Each month, a clinical pharmacist presents a clinical topic to all pharmacists and students during the lunch break. To date, the learning sessions have been well received.



Education of other pharmacists

SXHCSU is one of the tertiary hospitals approved by the Ministry of Health and Family Planning to provide training for clinical pharmacists throughout China. Each year, other secondary and tertiary hospitals assign pharmacists to be trained by clinical pharmacists at SXHCSU. With the help of the faculty member from the University of Alberta, the pharmacy department developed a structured clinical pharmacists training program that includes self-assessment, and continuous evaluation and feedback from the preceptors. The clinical pharmacists at SXHCSU are able to mentor/teach the trainee pharmacists to assess patients in a systematic approach.

The hospital hosts an annual national pharmacy conference in the fall. Since 2015 the department has focused the conference on more hands-on skills for clinical practice. In addition, the department has broadened its clinical pharmacy network in Canada and the United States. Through the collaboration with the University of Alberta, the hospital has invited diverse speakers from both countries. For instance, in 2015 the department invited a speaker from the Canadian Agency for Drugs and Technologies in Health to present the basics of evidence-based medicine. In addition, the speaker was invited to the hospital to provide a week-long journal club and lecture series on evidence-based medicine for clinical pharmacists. As a result of the lectures and journal club, the clinical pharmacists are more aware of the quality of clinical studies and published evidence.

Diabetes is a rapidly growing chronic disease in China. The department is aware that pharmacists could play a role in the management of diabetes. A faculty member from the University of Oklahoma was invited to make a presentation at the clinical pharmacy conference on the management of diabetes. Furthermore, she delivered a workshop to teach the pharmacists how to use a glucometer, so that they, in turn, could teach patients how to monitor their daily glucose levels.

Research

Before 2015, almost all of the research and publications from SXHCSU were focused on basic science. Currently, more than ten clinical pharmacy research projects have been approved by the hospital Research and Ethics Committee. Five of the

projects have been completed, and two articles were published in 2017 [3, 4]. Through these research projects, the pharmacists learned to design and develop clinical studies. Also, the results from the studies show that clinical pharmacists could and should assess and educate patients for chronic diseases such as diabetes. Most importantly, the results from the studies will help support improvements to hospital practice and policies.

Traditionally, the graduate student researchers from Central South University focus their research on basic science topics. Beginning in 2015, clinical pharmacy research was incorporated in the graduate program for master's degree students. The students are assigned a clinical pharmacy project as their research topic and are supervised by a clinical pharmacist.

The pharmacists, in particular new and inexperienced pharmacists, have difficulties in obtaining pharmacotherapy references in Chinese that are comprehensive. As a result, with the help of the faculty member from the University of Alberta, the department will shortly be publishing a therapeutics textbook in both Chinese and English. This is the first pharmacy textbook to be published in both languages.

Conclusion

Following the train-the-trainer program, pharmacists at SXHCSU are now providing comprehensive pharmaceutical care to all patients. The pharmacy clinical leader developed and implemented a structured training program for clinical pharmacists. The clinical pharmacists are conducting clinical pharmacy-related research.

In October 2016 the Ministry of Health ranked SXHCSU as having the third best hospital pharmacy in China because of all the positive changes made in the pharmacy department. In addition, the pharmacy department received a financial award of five million renminbi (one million Canadian dollars) to support it to further advance the clinical pharmacy department. With this additional funding, SXHCSU will be able to invite the faculty member from the University of Alberta as a distinguished professor to the hospital each year for the next 3 years to extend the collaboration between the two institutions.

Although the collaboration between the two institutions resulted in numerous positive impacts, the immeasurable



impact from this collaboration is the friendship developed and continuing between SXHCSU and the University of Alberta.

Conflicts of interest

The authors declare that they have no conflicts of interest.

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Author contribution

Ping Xu, Andrew Cave, and Hoan Linh Banh were responsible for conceptualization, resource, validation, writing, review, and editing. Da Xiong Xiang was responsible for conceptualization, resource, validation, and review.

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