



Review Article

PHARMACY HEALTH SYSTEM IN CANADA: AN ADOPTABLE MODEL FOR ADVANCED CLINICAL AND PHARMACEUTICAL CARE

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INTRODUCTION

The philosophy of patient care is a wide and complicated topic of literature. That is elaborated by different health institution to harmonize their local clinical activities. Undoubtedly, that is working successfully to satisfy patients, fulfill the requirement of clinicians and cover maximum mutual benefits within officially allocated budget. However, patient care has different comprehension in different demographic and socio-political setting. But, in general, the meaning, understanding and composition of clinical and pharmaceutical patient care may be same all over world. The pharmacists, clinicians and administration adopt, exercise and emphasize on certain parts depending upon the type of challenges, kind of patients and available health care facilities.

Thus, the health care is an emerging field that always remained under consideration. The local and international experts like to work, contribute and improve it to enhance the public health. Even some time judiciary, parliament and local intelligentsia focus and emphasize to address some particular health related problems. So, we may need to elaborate the comprehension to satisfy the literature and logical need of health and medicine including identification of problems, designing treatment protocol and handling the complication of therapy. That may potentially improve the overall outcomes and maximize the patient's benefit. [2,4] After twenty five years the definition of pharmaceutical care is still unsatisfactory. The confusion remained about what this term comprises and how to distinguish it from other terms. The board of the Pharmaceutical Care Network Europe (PCNE) felt essential to rephrase pharmaceutical care and to answer the question: "What is Pharmaceutical Care ". [1] The patient care is not perfectly incorporated into the health care system in most part of the world. However, pharmacy practice has shown positive attitudes toward patient care provision. Thus, an advanced working should focus to improve the understanding the concept of patient care and overcome barriers. [4]

Moreover, a scientific and logical paraphrase definitions of patient care is needed using the standardized syntax. That should focus on the subject, activities, provider, recipient and outcomes in clinical practice. The professional activities and/ or event may potentially help to define the intended and applicable parts of clinical and pharmaceutical patient care. These should cover the potential challenges of representative work setting and validate internal or external obligations.[1,2] In addition of that the basic components of clinical pharmacy practice i.e. prescription, administration and documentation of drugs should be delivered perfectly. That helps to improve the overall professional services of drug reviewing, counseling and prevention of medication errors. Whereas, the most current scope of pharmacy practice also include the drug information, drug consumption, drug assessment and selection, medication therapy management, formal education and training program, disease state management and application of Electronic Data Processing (EDP). [5] Moreover, the pharamcovigilance, pharmaco-economics, therapeutical monitoring, bio-safety, drug information, and

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aseptic dispensary also improve the quality of patient care. [6]

However, there are certain obligations regarding clinical and pharmaceutical care of patients. That helps us to mitigate the drug interactions, wrong prescription, misjudgment and inaccurate diagnosis. So, the pharmacy professional work collectively to achieve the common goals of improving the health standards, mitigation of drug abuse and rationalization of prescriptions. [7] Moreover, the new protocols, techniques and procedures i.e. bio-safety, therapeutical monitoring, medication review are adopted gradually to assure safety of patients. [8] The new legislations and drug jurisprudence helps to offer a balanced health practice that harmonize the collaborative working of the judiciary, civil society and political leadership. [6,9]

COLLECTION AND INTERPRETATION OF INFORMATION

The scientific information collected form Medline, Embase, PubMed, Cochrane Central Register of Controlled Trials, International Pharmaceutical Abstracts, Cumulative Index to Nursing, and Allied Health Literature and Latin American & Caribbean Literature on Health Sciences databases. The research article and databases were searched from inception to get more relevant and current knowledge of this field. The duplications deleted and titles or full texts were screened to obtain the exact scientific information. The lists reference citations were reviewed for any additional studies. We also contact the authors to collect any possible or missing information and/ or clarification.

PHARMACEUTICAL PORTFOLIO IN CANADA

There are approximately 42,500 licensed pharmacists working in community, clinical, regulatory, research and teaching institutions of Canada. More than 10,000 pharmacies are offering the clinical, pharmaceutical care all over the country. If we further analyze the data of pharmacy professional, it is concluded that approximately 70% are working in community pharmacies, 15% are working in hospitals, and 15% are working in other settings i.e. regulatory bodies, government authorities, drug production (industry), professional associations, academics institution and degree awarding universities. [10,13, 15]

The new role of the pharmacist has been evolved. That is more patient oriented instead of only focusing the prescribed medication only. Currently, pharmacists are valued as the drug specialists of the health care team. They interact with patients, collaborate with their families, involve in clinical situations and become an essential part of health care providers. That maximized the benefit the patient and Canadians health care institutions or authorizes. Hence the traditional role of the pharmacist is expanding. They deliver a range of advanced services across Canada including medication analyses, chronic disease controlling, immunization services and wellness programs. Most provincial governments have approved the pharmacist role to prescribe medicine with variable scopes of authority. [11, 12] That complements the health care provided by a physician and may potentially result convenience for patients to get their refills in minimum time spent dealing with prescription changes and combined medication management. [14,16]

The role of the pharmacist has changed a lot over the last twenty year. A widely expansion in scope of practice has gone far beyond a traditional dispensing. Pharmacists are working more for their patients than ever before and are playing a larger role in Canadian health care system. [2]

HEALTH CANADA

Health Canada is the Federal department accountable for serving Canadians to maintain and improve their health, while regarding individual choices and conditions. The Minister of Health is responsible for conserving and improving the health of Canadians. This is supported by the Health Portfolio which comprises Health Canada, the Public Health Agency of Canada, the Canadian Institutes of Health Research, the Patented Medicine Prices Review Board and the Canadian Food Inspection Agency. The Health Portfolio consists of approximately 12,000 full-time equivalent

employees and an annual budget of over \$3.8 billion. [6] The general composition of Health Canada is given in Figure 1.

Canadian Food Inspection Agency (CFIA) is working to mitigate the risks regarding the safety of foods. The health and safety of Canadians residents are the highest priority of CFIA's. That is the driving force behind the design and development of their programs. Hence, the CFIA is working in collaboration with consumers, industry and federal, provincial or municipal organizations. Their partnership continues to work towards protecting Canadians from preventable health risks related to food, contagious, zoonotic and infectious illnesses.

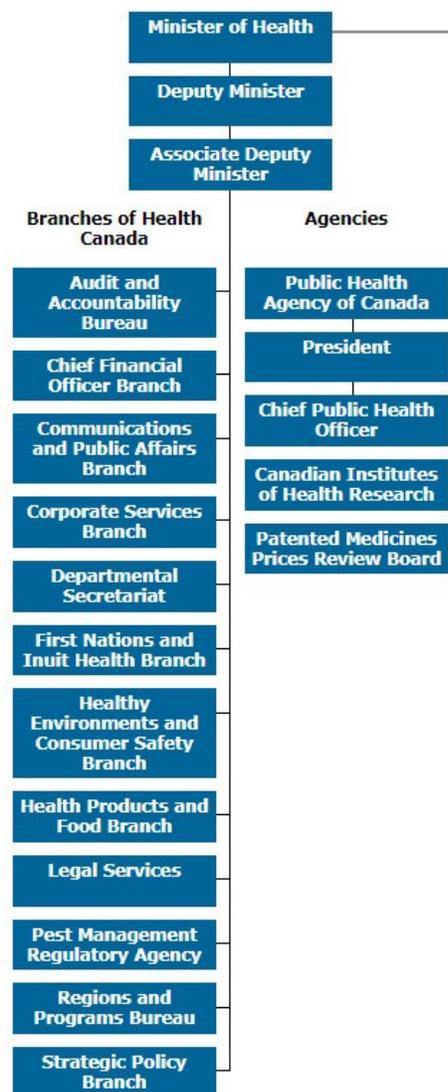


Figure 1. Health Canada's organizational chart. [6]

(Adopted from Health Canada)

The **Canadian Institutes of Health Research** is another Canada's leading federal agency for health research. Its objective is to produce new information that can be translated into improved health for Canadians, more active health services and products and a reinforced health care system.

Moreover, the **Patented Medicine Prices Review Board** is a quasi-judicial body that defends

consumers and contributes to health care by confirming that the manufacturers' prices of patented medicines are not too much.

Whereas, the **Public Health Agency of Canada** provide the Government of Canada's commitment to help look after the health and safety of all Canadians. Its actions focus on controlling chronic diseases, like cancer and heart disease, avoiding injuries and reacting to public health emergencies and infectious disease outbreaks.

Additionally, Health Canada worked to renovate and update the regulatory system for food and health products. The regulation that considerably supports the activities, health and welfare of Canadians are disseminated, revised and applied i.e. Food and Drugs Act Liaison, Classification of Health Products at the Device-Drug Interface, Health Products & Food Regulatory Modernization, Information about Nanotechnology Based Health Products and Food, Chemical Substances Portal etc.

ACTS AND REGULATIONS

There are many pieces of legislation introduced and enforced by Health Canada administers. They have designed regulations under legislation that have a direct impact on the Canadian's health and safety. The officials of regulatory authorities consult with the local industry, drug experts, public representatives, Non Governmental Organizations and other relevant parties. They also prepares guidelines to interpret and clarify the legislation and regulations i.e. Pest Control Products Act, Agriculture and Agri-Food Administrative Monetary Penalties Act (to issue executive monetary penalties to implement compliance with provisions of the Act and associated Regulations), Canada Health Act (describe the criteria and conditions to receive the contributions under the Canada Health Transfer), Canada Consumer Product Safety Act, Canadian Environmental Protection Act 1999, Cannabis Act (received Royal Assent on June 21, 2018, and will come into force on October 17, 2018), Controlled Drugs and Substances Act, Department of Health Act (define the powers, duties and functions of the Minister regarding the promotion or preservation of the health over which Parliament has jurisdiction), Financial Administration Act, Food and Drugs Act, Hazardous Materials Information Review Act, Hazardous Products Act (elaborate the supplier label and safety data sheet requirements of the Workplace Hazardous Materials Information System, WHMIS), Patent Act, Pest Control Products Act, Radiation Emitting Devices Act, and Tobacco and Vaping Products Act. [2,6]

CORPORATE DRUG CHAIN OF PHARMACEUTICAL BUSINESS

The Canadian pharmaceuticals industry is currently the second largest health expenditure in Canada. The drug stores and pharmacy working in community and retail business are raising the drugs prices to generate considerable revenue. Whereas, some provincial drug programs have restricted prescription prices to cut healthcare costs to consumers, hurting industry operators. However, there are following main brands offering pharmaceutical care in Canada.

Brunet Pharmacy was introduced in 1855 in Quebec City of Quebec. Wilfrid-Étienne Brunet founded the first Brunet pharmacy, that was largest one at the time. Whereas, during 1982, four other branches were started in same city. In 1987 it was launched in Montreal QC and later expanded to most of the province of Quebec and now includes 182 branches.

Drug Store Pharmacy was initially founded in 1916 with the brand of Loblaw Groceterias Limited, store in Toronto, Ontario. Loblaw Companies Limited is now a big Canadian corporate and franchise business that offer pharmaceuticals, grocery, electronics, financial services and apparel. The main brands of Loblaw include President's No Name, Choice, T&T, Joe Fresh, Seaquest, Exact, Azami, and Teddy's Choice. They have approximately 136,000 full time and part-time employees in Canada.

Familiprix was started by Médico-Prix in 1977 in Eastern Quebec. This brand name of Familiprix

was introduced in October 17, 1979. Whereas, it was extended to Montreal during 1990. Currently, Familiprix has ≥ 250 branches in Quebec and New Brunswick. Their head office located in Quebec City with additional office in Montreal.

Jean Coutu founded in 1969 by Jean Coutu and Louis Michaud as a pharmacy outlet in the east side of the Montreal QC. That was officially incorporated in 1973 under the name of Services Farmico, enticed. That name was then changed in 1986 to its current existing name of Jean Coutu Group (PJC) Inc. So, they entered into the New Brunswick market in 1982 and afterward in the Ontario market in 1983. Their headquartered is located in Varennes, Quebec and now having ≥ 400 branches in New Brunswick, Ontario and Quebec.

Lawtons is maintained by the Sobeys Group of Stellarton, Nova Scotia with a head office located in Dartmouth, Nova Scotia. Lawtons has ≥ 67 branches operating throughout Atlantic Canada, in the provinces of Newfoundland New Brunswick, Nova Scotia Labrador, and Prince Edward Island.

London Drugs was founded by Sam Bass during 1945 in Vancouver, British Columbia. In 1976 London Drug Store extended for the first time, beyond the provincial border into Edmonton Alberta. During the next ten years, London Drugs increased the number of outlet branches. They also began increasing the variety of products. Afterward, in 1981, London Drugs expanded services introduced the computer in 1983. The headquarters of London Drugs is located in Richmond, British Columbia and have 78 stores in the provinces of Alberta, Saskatchewan, Manitoba and British Columbia.

The **PharmaChoice** founded in 1999. This is a member owned cooperative of Canadian pharmacies. They have ≥ 740 independent pharmacies across Canada, generating $\geq \$2B$ in retail practice.

Pharmasave was introduced in 1981 by the merging of two local brands of Western Drug Mart and United Pharmacy in British Columbia. They are now located all over the Canada.

Proxim is the merger of Essaim and Santé Services, on August 2004. Whereas, the Proximed banner was officially introduced created on February 2007. They have 31 branch locations working under the brand name of Proximed. On June 19, 2008, McKesson Canada acquired Proxim.

Rexall founded in 1903. The "Rex" in the name came from the common Rx abbreviation for medical prescriptions. It is a Boston based American drugstores. In Canada the over the counter products are operated by McKesson Corporation, and of health supplements in the United States since 1985. However, until about 1977, the US Chain did have Rexall drug stores in Canada.

Shoppers Drug Mart or Pharmaprix was established by Murray Koffler in Toronto Ontario in 1962. He generated the Associate Concept to delivers individual pharmacists the opportunity to combine self-governing business ownership, professional practice and supportive services under one brand, with the provision of a commercial entity. This visualization endures to be the foundation of Shoppers Drug Mart and the Associate-owners have helped build a brand that is identical with extraordinary service, worth and trust. Over the past 50 years, the retail format is persistent to progress and the Company's drug store network has grown through procurements and new construction, helping Shoppers Drug Mart become Canada's leading drug store retailer. Today, there are $\geq 1,307$ Shoppers Drug Mart and Pharmaprix stores across the country. In 2014 Loblaw Companies Limited acquired Shoppers Drug Mart Corporation for \$12.4 billion in cash and stock.

The **Uniprix** pharmacy chain was founded in 1977 in Quebec, Canada. It is mainly based in Saint-Leonard, Montreal, Quebec and operates under four brands: Uniprix, Unipharm, Clinique Santé and Uniclinique. Combining its four brands, Uniprix is the 2nd largest pharmacy chain in Quebec after Jean Coutu and is mutually exclusive with the Pharmasave chain in English Canada.

Value Drug Mart known as Value Drug Mart Associates Ltd. was founded by pharmacist Barry Katz

in 1978. Since 1983, Value Drug Mart also supports the local vents.

INTERNATIONAL COLLABORATION

The Canadian health professionals may also collaborate and coordinate with international organizations. That may be bilateral or trilateral to help and support the institution, patients and/ or working professional. The compliance and enforcement become more useful to provide fruitful outcomes. Thus, the main institution that can mutually share the information with Canadian professionals are Food and Drug Administration (FDA) USA, Therapeutic Goods Administration (TGA) Australia, Agence Francaise de Securite Sanitaire des Produits de Sante – France, Medical Product Agency – Sweden, Medicines Control Agency - United Kingdom, European Commission - Enterprise DG Pharmaceuticals - Regulatory frameworks / Market authorizations and European Agency for the Evaluation of Medicinal Products. [13,15, 17]

PROFESSIONAL BODIES AND REGULATORY AUTHORITIES

The **Canadian Minister of Health** is working excellently to offer, improve and maintain the best possible health facilities for Canadian residents. The health institutions are working effectively to achieve the goals and objectives. The Health Portfolio that comprised of Health Canada, the Canadian Institutes of Health Research, the Public Health Agency of Canada, the Canadian Food Inspection Agency and the Patented Medicine Prices Review Board have good collaboration and coordination. Thus, the Health Canada has \geq \$3.8 billion annual budget along with approximately 12,000 permanent employees. [3]

Moreover, the **Canadian Pharmacists Association** (CPhA) is potentially contributing in the overall health care system. The qualified pharmacist and health care professionals are improving and creating new opportunities. They are ambitious to offer better patient care in the country. Hence, CPhA has charted the course through many developments in pharmacy since 1907. This is a national, non-profit organization and continues to be the national voice of Canadian pharmacists.[9]

Additionally, the **Canadian Society of Hospital Pharmacists** (CSHP) provides the clinical and pharmaceutical care to the indoor (admitted) and outdoor patients. This national voluntary organization of pharmacists committed to offer the active use of medication in hospitals, advancement of safety and collaborative patient in healthcare settings. They help and support through education, advocacy, promotion of best practices and sharing of knowledge and current information.

Whereas, the **National Association of Pharmacy Regulatory Authorities** (NAPRA) is another national institution. That comprised of a voluntary association of local, provincial and territorial pharmacy regulatory bodies and the Canadian Forces Pharmacy Services. NAPRA was founded in 1995 to offer national governance in pharmacy regulatory practices that enhance patient care and public protection. That regulates the pharmacy practice and implements the standards to reassure quality health facilities. Their primary instruction is to protect the public assure by organizing the operations of pharmacy professionals in their respective jurisdictions. Hence, NAPRA provides a platform to talk about their concerns and problems. That help to build a national approach to address the common issues in hospital setting and community pharmacy practices.[8]

Canadian Association of Pharmacy Students and Interns (CAPSI) comprised of \geq 3500 pharmacy students and internees members in Canada. Their National Council, Executives and Locals members are representatives of the pharmacy profession. The elected executives from any Canadian Pharmacy faculty and two Local candidates represent their respective Pharmacy institution. They work to provide the digital, electronic and scientific support to offer the best possible information and guidance to new pharmacy graduates. [9]

REPLICATION AND ADAPTATION OF MODEL SYSTEM

The international community may potentially simulate and replicate this model of clinical care. That will help to shape the future and rationalize the resources. Particularly the developing countries of the world including middle east, central Asian states and far east part of the world may get benefit by designing effective strategies to improve the public health. Moreover, the academic staff of teaching institutions, community and/ or clinical pharmacists can play the key role build the foundation at gross root level. That brings more conclusive improvements in overall health care system. Particularly the drug regulatory officers, law enforcement agents and policy makers may help to address certain specific segment of pharmaceutical care. Thus, the exchange of tools, technologies and information is another option for developing countries to obtain benefit for their public.

Additionally, the organizing and participation in certain professional and scientific events i.e. conferences, exhibitions, training sessions, webinars, etc may potentially help to understand, introduce and implement the new tools and features. The relevant professionals may then able deliver to improve the local health care facilities. Whereas, the corporate businesses may sign mutual memorandums and agreements to address the particular component of clinical and pharmaceutical care.

Additionally, the diplomatic relationships can potentially enhance the mutual understanding. The ambassadors and consulate can work to maximize the benefit. The different countries and nations obviously have their own particular health related problems and challenges. They might have different inclinations and preferences. But, the health experts, public representatives and government officials may work jointly to figure out the flaw in health care system. That will help to decide the ultimate goals and objectives. So, an effective and rational plan will assure the successful adaptation and replication of Canadian health care model.

CONCLUSION

In conclusion, the Canadian clinical and pharmaceutical care for patients is a model system for health professional of the world. The pharmacists, physicians and paramedics are constantly working to improve their skills and deliver best possible professional services. Additionally, the successful joint effort of public legislature, health professionals and government institutions has improved the overall quality of patient's health care. Hence, the research institutions, pharmaceutical manufacturers and corporate businesses are continuously contributing to assure the rational and effective treatment of emerging clinical challenges. Most of the Canadian health departments are integrated to exchange the permissible data and relevant information to handle potential challenges more efficiently and rapidly. So, this kind of exceptional effort of Canadian health professionals may be a model of collective team work. That has successfully gained the respect, recognition and scientific value all over the world. That is an adoptable model for other advanced and developing countries to assure the safety of patients, correct use of resources and protection of environment.

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