Chapter 11 Pharmacy 1945-1967

World Situation

The Second World War ended with the dropping of the atomic bomb on Hiroshima and Nagasaki in August 1945 causing hundreds of thousands of deaths. People in Canada were ecstatic when the war finally ended. It had lasted six years and caused tremendous dislocation and social tragedy. In Europe and Asia there was massive destruction and dislocation so a period of sorting out and reconstruction began. Large numbers of displaced persons had to be fed, sheltered and resettled. Canada played a major role in this as a moral obligation and the process of absorbing displaced persons lasted several years. In 1945 the United Nations was established.

In 1947 India become independent based on Gandhi's nonviolent campaign and was partitioned into India and Pakistan on a religious basis. This process was marred by riots and attacks based on religion that killed hundreds of thousands. Mohandas Gandhi was assassinated the next year.

The world quickly became aware that Russia was not leaving the countries it had liberated from the Germans. Russia was building an empire and was not open to discussions of trade or cooperation. The Cold War had begun. In Canada, Igor Gouzenko defected from the Russian embassy with secret documents that he stole and after a period of disbelief Canada took the matter of Soviet spies seriously. It prompted the development of the North Atlantic Treaty Organization in which Canada had a major role.

In China the Communists were fighting the Nationalists under Chaing Kai Chek in a long bloody battle that lasted several years before the Nationalists retreated to Taiwan. Other battles with Communist insurgents took place in Greece, Burma, India and Indo China. The French attempted to regain their colonies in Indochina but were unsuccessful and called on the U.S. to assist them. This led to the United States' involvement in Vietnam for a decade. In Korea the Communist North invaded the South in 1950 and the U.N. called on countries to assist in a "police action". Canada took part sending a Brigade Group to Korea where they were involved in fighting against the Chinese "volunteers" that came to the assistance of North Korea. Hungarian citizens began protesting Russian rule and demanding free elections in 1956. Russian tanks moved into the major cities and fighting broke out throughout the nation. Thousands were killed and the leaders executed. Many more thousands fled the country and Canada was a beneficiary of some of these refugees. In 1961 Cuban refugees armed by the United States invaded Cuba at the Bay of Pigs and were defeated with many captured. This was an embarrassing situation for the United States as they had claimed they had no involvement in the attack when in fact they had strongly organized and supported it.

Western Europe rebuilt with the aid of the United States (Marshall Plan, named after General Marshall) and the new factories and technology enabled them to become prosperous again. They also rearmed to face the Soviet threat. Canada stationed a Brigade Group in Europe as part of the British Army on the Rhine. Canadian fighter planes were also stationed in Europe. They were in Europe for about 20 years. Trudeau reduced the armed forces and brought them home.

In 1963 President Kennedy was assassinated in Texas.

Riots took place in Los Angeles in 1965 based on racial issues. The centre of the city was burned and 34 people killed with over 4,000 arrested. This event caused a major investigation of police practices and racial policies.

Natural disasters continued to occur during this period including a huge wave, described at the time as a seismic wave and now as a tsunami, which resulted from an earthquake in the Aleutian Islands and moved quickly to the Hawaiian Islands in 1946. Initial waves of 10-12 feet were followed by a massive 50 foot wave that damaged the area around Hilo, killing 180 people and destroying over a thousand buildings.

A massive flood in China in 1950 washed away 890,000 homes and left 10 million homeless. The province of Jiangsu was under a sea of water and crops were not able to be planted the following year. China seemed to have a series of serious floods. In 1954 the Yangtze flooded with 40,000 deaths and a huge flooded area.

In Texas City the explosion of a ship loaded with fertilizer followed by the explosion of a Monsanto factory created a powerful explosion similar to the Halifax explosion. There were 500 deaths and over 3,000 injured as well as the destruction of most of the city.

The world was a different place then. While assistance to those affected in Hawaii and Texas was substantive and immediate, there was no international assistance to those in China and the event itself was not given much news space. Difficulties in communication and transportation made events in developing countries isolated tragedies. The number of deaths occurring were a result of the direct effects of the disaster plus the deaths resulting from disease caused by the disruption of food, water and waste systems. At this time there were few antibiotics available, a situation that was soon rectified.

Changes in Canada

At the end of the war Canada had been transformed. From the weak economy of the depression and agricultural drought Canada became a strong industrial power with soaring exports and high personal incomes. There was also a social change with a breakdown in the class structure and opportunity for children to exceed the social and economic level of their parents. This was the creation of the social and economic structure of Canada as we know it. The post war boom lasted for several decades and Canadians grew up in an era of plenty. Social programs grew and were funded by taxes on profits from free enterprise and high wages. Old Age Security was established in 1951 and provided a guaranteed pension to all citizens aged 65 and older.

Industry shifted to consumer products as many war time factories funded at taxpayer expense were sold cheaply on the condition they hire staff, especially veterans. Unions became strong and strikes occurred to improve working conditions and wages. One of the most noteworthy was the strike at Asbestos in Quebec that lasted for years. A bitter strike at Ford in Windsor established the Rand Formula which became a standard feature in labour contracts requiring all workers to pay union dues when they benefited from the labour negotiations. They did not have to belong to the union but they did have to pay union dues. In 1956 the Unemployment Assistance Act was passed requiring workers to contribute to a fund that would assist them when unemployed.

This new social democracy was a government commitment to create jobs and reduce regional disparity as well as funding pensions and social infrastructure of roads, hospitals and schools. Housing was a major priority for veterans who were married and wanted to raise a family resulting in a burst of construction and the beginning of suburbs around the major cities. An era of full employment, resource development, increased industrial production and trade was created in comparison with the bankrupt countries of Europe and the struggle against colonialism in developing countries.

A major oil find at Leduc, Alberta made Canada an energy producing country in 1947.

Canada had come out of the war a major country in the international order. It had the world's third largest navy and fourth largest air force. The wartime industrial growth created a strong base for producing for the domestic market as well as international trade. Trade with the U.S. also grew with closer integration of the two markets. Pressure for free trade with the U.S. was raised but the Canadian government was afraid of the concept and it was dropped. Some war time industries continued to make airplanes and armaments for the Canadian armed forces that were maintained on a larger basis than before the war. This continued until 1959 when the Avro Arrow was designed and flown then scrapped with all the planes destroyed. At the outbreak of the Korean War in 1950 Canada had to recruit hastily to raise a Brigade to send to Korea along with some ships. This war, coming soon after the creation of NATO in 1949 in which Canada had a major role, maintained Canada's active role in supporting the United Nations in international affairs. This was the era of the Cold War and Canada played an important role.

Newfoundland was a British colony that voted, narrowly, to join Canada in 1949. It became Canada's tenth province and was integrated into the political, economic and social fabric of the nation. This immediately raised income levels and improved health care. Despite this there were many who opposed confederation and the bitterness continued for some time.

The social circumstances in Canada led to increased numbers of marriages and children, averaging three to four per family. From 1947 onwards the Baby Boom was underway creating a large number of children whose numbers changed the culture and economics for several decades. One important aspect was the expectation that they would not be held back to the jobs and culture of their parents. There was an expectation that many more children would go to university. The previous generation had only a small proportion of the cohort (about 4%) go to university. Governments spent money on post secondary education and more universities were built. Sputnik launched by Russia in 1957 accelerated the funding of science education.

Health care was still fragmented with physician sponsored health insurance recently initiated. In Saskatchewan the socialistic Commonwealth Cooperative Federation (CCF) launched government sponsored health programs, first in the Swift Current region and then province wide. The model of hospital insurance was then adopted by Canada as the Hospital Insurance and Diagnostic Services program in 1957. This enabled the federal government to share the costs of health care. Soon after, in 1962, Saskatchewan initiated a province wide medical insurance program. This was strongly resisted by the physicians and a doctors' strike took place. This program also was adopted by the federal government as the Health Insurance Program (Medical

Care Insurance) in 1966. Both programs operated on the basis of federal/provincial cost sharing with the federal government paying half the cost. The underlying premise was that hospital care and surgery by physicians was expensive and resulted in a financial barrier to most people. It was assumed that the other aspects of health care could be funded by families. This model is based on acute care and later on as the population aged it was less viable as a health system.

Unfortunately, the arrival of the miracle drugs in the late 1950's and early 1960's imposed a substantial cost to families needing these drugs. People with arthritis who could not walk were able to get up and walk with the aid of corticosteroids. But the cost was very high. Similarly, psychotherapeutic drugs, hormones, antibiotics and analgesics appeared in large numbers and overwhelmed the ability of families to pay for them. Drugs used in hospitals were supplied as a benefit, however, the health system did not cover pharmaceuticals outside hospital except for municipal welfare programs. The introduction of generic drugs offered a partial solution but it also caused problems. The province wide drug benefit programs did not begin until the early 1970's and initially were for social assistance recipients and later for seniors.

The automobile age blossomed and a Trans-Canada Highway was built from coast to coast, opening in 1962. Radio broadcasts became national and in 1952 the first CBC television stations appeared. This accelerated the cultural unification of Canada and had a particularly strong impact on Quebec which had a Quiet Revolution stimulating French Canadian culture, business, secular education and a partnership with the rest of Canada based on biculturalism and bilingualism. It was the growth of Quebec nationalism that continued to flourish for several decades and shaped not only Quebec but also national politics. For most of Quebec's history the economy had been dominated by English speaking businesses and this began to change in the late 1950's.

Social programs continued to grow with federal grants for post secondary education and hospital construction. The Canada Pension Plan was initiated and the Canada Assistance Act established to assist the provinces in funding welfare programs (1966). This led to the shift in welfare from the municipal level to the provincial level with less regional variation and more substantial benefits, especially health benefits.

In 1964 a new Canadian flag is adopted with a lot of opposition. A few years later in 1967 Canada celebrated its Centennial. This resulted in a flood of publications from communities, groups and academics describing all aspects of the first 100 years of Canadian history. A tremendous change had taken place and was continuing as a long, prosperous era. An official national anthem, "O Canada", was adopted to replace "God Save the Queen". A national commission on the Status of Women is appointed

Through the 1960's there was economic growth and a rapid increase in incomes with some bargaining groups achieving gains of 20-30 percent in contracts. Inflation became rampant and high interest rates resulted. The federal government was able to initiate grain sales to China, Russia and Eastern Europe, despite their opposition to the communist bloc, a major trade achievement.

Environmental concerns arose in the Great Lakes region especially Lake Ontario and joint U.S.-Canada efforts were initiated to clean up the mess. Pollution Probe was formed to stir public

opinion and create a mechanism for action.

A new era began with the election of Pierre Trudeau. The “just society” emerged in a flurry of social programs, funding for the military was slashed, international relations moved beyond the United States to Europe and Asia, and the francophone community was recognized through bilingual and bicultural priorities. This transformation of Canadian politics and culture became the basis for Canadian governmental programs and policies for the next two decades.

Scientific Advances

During the war the system of emergency treatment made tremendous strides and many wounded lived as a result. Not only at the front line but all the way back to Canada the treatment of casualties became very efficient and effective. Veterans’ hospitals were built and rehabilitation was provided.

In the summer of 1946 the last major outbreak of polio occurred in the United States causing over 25,000 new cases, mainly in children. The scourge of polio caused fear and frustration. Treatment was supportive and led to the building of hospitals specifically for the treatment of polio. The polio vaccine a few years later was an enormous health advance that continued until today when the last vestiges of polio are eliminated from parts of India and Africa.

Many of the scientific breakthroughs in science and technology began to be applied to consumer products and research projects. Nuclear fission was used for energy. Jet planes were used for transportation. Meteorology was used for weather forecasting and radar was applied to a wide range of uses. Motor vehicles were much more efficient and safe even operating at high speeds.

Canada developed the Avro Arrow (1953-59), a supersonic advanced fighter. This endeavor created a respectable aeronautics industry in Canada and ignited the pride of Canadians. Unfortunately the costs were high and foreign sales doubtful so the Prime Minister John Diefenbaker cancelled the project and ordered the planes that were built to be destroyed. American fighter planes were purchased the next year. The Arrow continues to be a Canadian source of pride.

New drugs from pharmaceutical research began to flow from industry to the health professions. Physicians were enthused about the new products and reacted to pharmaceutical marketing by prescribing them zealously. Although the high price was a problem the market for new products was very large and grew quickly.

Isotopes were used for the treatment or cancer with the first betatron for cancer treatment built in Saskatoon and later the first cobalt “bomb” was constructed by Dr. Harold Johns and utilized. It is unclear how the name “bomb” became attached to this device which directed a stream of radioactive beams to a selected cancer site.

Pharmaceutical Product Development and Regulation

New drugs flowing onto the market were not regulated to any extent and safety concerns began

to arise. Some problems were quality problems due to poor formulation, especially of cheap generic drugs that were entering the market in response to concerns over high drug prices. Canada's Food and Drugs Directorate established a research laboratory to measure and set standards for drug disintegration and dissolution. A more serious problem was the toxicity of some drugs. Thalidomide came on the market in 1960 and it caused limb deformities in children born of mothers who had used it during pregnancy. One of the indications for use was as a hypnotic in pregnant women due to its safety as it was safe in large doses. Over time other drugs were found to have problems and increasing regulatory requirements were initiated. Marketing claims were also evaluated and restricted to those that were supported by clinical trials.

Major changes to the drug regulations were implemented in 1963-64. A schedule of drugs requiring prescriptions (Schedule F) was created. Controlled Drugs (barbiturates and amphetamines) were in Schedule G and restricted drugs (thalidomide and LSD) were placed in Schedule H. Some prescription drugs that were on the market were not listed on Schedule F (for example digitalis) but this caused few problems since their use was well known and there was little abuse. Later, however, when only prescription drugs were included in benefit programs in the 1970's these ethical (prescribed) drugs were not listed as a benefit. As a result, a number of these products were then placed in Schedule F. There is some confusion with the alphabetical listing of drug schedules as some are schedules to the Act (Schedule A) and some are schedules (Schedule F) are part of the regulations.

The abolishing of the Patent or Proprietary Medicines Act in 1963 changed the nature of the nonprescription drug market. Many of the traditional products and their manufacturers disappeared and the ethical firms (marketing to health professionals rather than to the public as was done by proprietary firms) entered the market and now dominate it.

At the provincial level, the pharmacy licensing bodies set ethical standards that prevented pharmacists from telling patients about their medication, even the name of it. This was based on a perceived concept of inter professional relations in which it was the physicians' responsibility to tell the patient about the medication. While this may have made sense in the early days of compounding, it was anachronistic for the new medication and the better educated public. Around 1960 some hospitals began labeling medication with the name of the drug and the concept spread, although slowly. It is believed by some that this was a major factor is slowing the development of the profession.

Antibiotics were developed at a rapid rate with a stream of new products flowing from industry screening programs. Initial attempts to synthesize penicillin chemically in the 1940's were a failure and delayed the development of fermentation processes. Synthesis methods were eventually discovered in 1953 but were uneconomical. Pfizer, a major producer of citric acid, had large scale fermentation technology and became a major producer of penicillin. The Canadian troops in Italy during the war received penicillin from Pfizer. Based on this experience Pfizer developed chlortetracycline (Aureomycin) and this began its major thrust into the pharmaceutical marketplace. Pfizer was the first major American firm to have more than half its sales outside the United States. The major pharmaceutical firms quickly identified the antibiotics discovered by academic researchers (Rutgers University in the United States was particularly active in this field) and produced and marketed streptomycin, chloramphenicol, polymyxins, and

the tetracyclines. Identification of penicillinase as the cause of penicillin resistance gave rise to the semi-synthetic penicilllins. These new products, (methicilllin, ampicillin, cephalosporins) were not only resistant to penicillinase, they also had a broader spectrum of action and were more effective against some organisms.

In 1960 Enovid was introduced. This first oral contraceptive (now referred to as The Pill) was first used for "menstrual disorders" since promoting contraception was still unlawful and socially unacceptable. Despite this social stigma, the G.D. Searle Company promoted the product as an oral contraceptive and it was immediately successful despite some side effects from the high dose of progesterone that made it uncomfortable for many women. These side effects diminished later with the introduction of lower dose products. There was little opposition to the marketing of these products and they changed society in many ways. They are described as a liberation measure for women as unexpected pregnancy is greatly reduced allowing family and occupational planning. They also had a role in the youth counter culture represented by hippies and communes. It is interesting to note that fifty years later these products are still not allowed to be sold for contraception in Japan. Their widespread use and unique pharmaceutical distribution system which included public health clinics, university health centres and birth control clinics created a novel situation for many years. There was also a separate pricing schedule for oral contraceptives as they were used as a loss leader by many pharmacy chains. Federal and provincial regulations were bent to enable the distribution through non-pharmacy outlets. For example, the student health clinic at the University of Alberta obtained its oral contraceptives, and other drugs, through the University Hospital until they obtained a pharmacy licence.

Pharmacy Developments

The Canadian Pharmaceutical Association came through the war in good shape and was keen on moving ahead. They now had full time paid staff and a backlog of issues to address. One was health insurance and a committee was formed to work with the government. Unfortunately nothing came of this for some time. There was a continuing concern over Socialized Medicine as it was linked to communism which was bitterly opposed due to the totalitarian regime established in Russia. The Beveridge Report in Great Britain initiated the National Health Service, and based on this many speakers and writers explained the nature of socialized medicine to health groups and the public, listing its benefits and some of its problems. There was a strong bias in Canada for free enterprise and physicians bitterly opposed any governmental involvement in health care other than public health.

The advances in pharmaceuticals and pharmacy practice in the 1950's led the pharmacy licensing bodies to enact regulations and new legislation. One goal was to have pharmacies owned by pharmacists so that the ethical standards were pharmacist based and the licensing body could initiate disciplinary action for breaches of ethics. The corporate ownership of pharmacies limited the scope of licensing bodies in regulating pharmacy activities such as advertising. If a chain store ran inappropriate advertising the licensing body would have to take action by charging all the managers of pharmacies. When this was done in Alberta it caused a serious legal battle. In 1959 the Ontario College of Pharmacists lost a court case enabling non-pharmacists to own a pharmacy. A few years later similar efforts in Alberta were unsuccessful in limiting pharmacy ownership to pharmacists. Only in Quebec were pharmacists able to retain ownership control.

The CPhA staff had an increasing number of issues to deal with and a demand for more communication in the form of meetings and committees. The staff grew continuously from 1945 to 1965 with the attendant problems of raising funds to pay for the salaries, travel and publications. Accidental poisoning prevention and poison control centres with their emergency phone numbers published, civil defence, vitamin standards, pharmacy examining board, inspection of imported pharmaceuticals, international linkage with U.S. and other pharmacy organizations, and abuse of medication are some topics that the association was dealing with concurrently in the mid 1950's.

The pharmacists in Canada faced a number of problems in the post war period. This was a period of transition from the established systems and organizations to the emergence of a flood of new organizations established to cash in on the surge of prosperity in the country. One problem was increased operating costs, especially salaries. At that time the manufacturers published suggested selling prices for their products, often printed on the label, and the difference between these prices and the acquisition cost to the pharmacist was the margin that determined the pharmacists' gross profit and net profit. There was a need for better communications in order to have the manufacturers and retailers meet the changing economic situation. The solution presented by the profession was the publication of a Price Book that would list 6,000 pharmaceutical specialties, 4,000 patent and proprietary articles, 3,000 cosmetics and 1,000 sundry items such as photographic film. By 1956 this Price Book included over 25,000 items. In the pre-computer age this compilation of information was invaluable, as was the information on new products and pharmacy organization activities reported in the now monthly Canadian Pharmaceutical Journal.

An example of the importance of CPhA in supporting pharmacists arose in 1951 when several pharmacists were charged by the federal government with dispensing penicillin ointment and suphathizole ointment without a prescription. The Secretary of the CPhA, John W. Preston, met with representatives of the Pure Food and Drug Division to deal with the problem. It was pointed out that distribution through non-pharmacy outlets was growing and that this should be the prime concern of government. In the case of penicillin ointment there was an exception made for this product to be sold without a prescription. The pharmacists that dispensed sulphathiazole ointment paid a fine to the department but the charges were then withdrawn and there was no conviction recorded against them. The operation of the Department of Health and Welfare was certainly different in those days and pharmacists were concerned about the heavy handed approach to enforcing regulations.

In 1955 the federal government hired pharmacists as narcotic auditors instead of R.C.M.P. staff. This was a great relief to the pharmacists and it greatly improved the control of narcotics. From this point on the two major groups of pharmacists employed by the federal government were the narcotic auditors and the military pharmacists. They later formed the Canadian Society of Governmental Pharmacists under CPhA.

In order to make CPhA more effective the Alberta Pharmaceutical Association passed a resolution at the CPhA conference in 1951 urging the building of a national headquarters for the organization. Over the next 15 years planning and discussions took place on building a national headquarters. A site was purchased in 1960 and the building completed in 1965. It was a 2½

storey building at 175 College Street in Toronto, across the street from the University of Toronto. CPhA occupied the main floor of the electrically heated, air conditioned building, while the Canadian Foundation for the Advancement of Pharmacy and the Ontario Pharmacists Association had offices on the second floor. At this time CPhA was an umbrella organization for all the pharmacy organizations in Canada and most contributed to this remarkable building. Pharmacists were asked to contribute $100 to the building.

1957 was the 50th Anniversary of CPhA. There were now over 8,000 members, permanent staff, plans for a building and an annual fee of $5. At the annual meeting it was proposed that the annual fee increase to $7 and three years later to $10. The next year Newfoundland joined CPhA and a truly national organization existed. This only lasted a short time as Quebec withdrew from CPhA in 1961.

The Restrictive Trade Practices Commission on pharmaceuticals began in early 1960's and CphA was asked to make submissions on trade practices relating to pharmaceuticals. One result was the recommendation to initiate compulsory licenses for new pharmaceutical products.

The furor over drug prices was exacerbated by the findings of the thalidomide investigation which revealed the terrible, deformities of children as a result of women taking the drug while pregnant. This led to pressure to change the pharmaceutical review process and make it more stringent.

In 1962 the Royal Commission on Health Services was initiated under Emmett Hall, a Saskatchewan judge. This was a comprehensive study of the health care system and pharmacy was asked to conduct a study of Pharmacy Manpower. This was directed by Tom Ross, associate secretary of CPhA. After the war many veterans entered pharmacy and this helped meet the need for pharmacists. Once the veteran bulge went through pharmacy classes dropped to pre-war low levels until the mid 1960's when enrollment was almost doubled in Canada.

Pharmacy was growing quickly with many pharmacies receiving recognition for having dispensed 1 million prescriptions. With the advent of manufactured products and many new drugs there was a surge in medication use and pharmacies recorded much higher prescription volume.

The issue of "high drug costs" dominated the early 1960's with strong public protests, government investigations and the entry into the marketplace of low cost generic manufacturers. The ethical pharmaceutical industry were strongly supported by pharmacists and became suspect by the public as being part of the problem rather than part of the solution. Many individuals and organizations thrived on being "experts" on the issue of high drug prices and its solution. Eventually an Expert Committee of Parliament, The Harley Committee, presented a report in 1968 that called for compulsory licensing, importing trade name drugs from abroad, manufacturing generic drugs in Canada, and reducing the tariff on drugs. The report called for all these things to be done as there would only be success if they were all implemented. The major change of issuing compulsory licenses to generic firm in return for only paying a small licensing fee of 4% dismayed the ethical pharmaceutical industry and resulted in a rapid drop in investment and no increase in research expenditures. On the other hand, the generic firms with

few costs other than manufacturing made huge profits and basked in the adulation of government and consumer groups.

The flood of generics generated another issue. When could pharmacists substitute a generic product for a brand name product prescribed? Initially, this was termed "substitution" and was against the pharmacy regulations. Later, it was "product selection" where the pharmacist, using professional knowledge, would select an appropriate product. The reality was that the pharmacist dispensed the brand that was carried by the pharmacy. Provinces became involved by insisting that the less expensive products only would be reimbursed. Manitoba was the first to legislate product selection and the other provinces followed suite with Alberta being last in practice although the government had introduced legislation very early. This concern over drug quality and variation led to testing of products and creating lists of equivalent products. At the federal level a testing and evaluation program, QUAD (quality assurance program), was initiated. The discussion on disintegration, dissolution and bioequivalence, began and continues.

The Pharmaceutical Industry Development Act provided low cost loans to pharmaceutical generic firms to expand production. There was no assistance to research based firms. The initiatives recommended by the Harley Report were largely implemented, found wanting and discontinued. Their appeal continues however and they continue to be raised as a means of "controlling drug costs".

Pharmacy Education

The pharmacy education system was inundated by students. Returning apprentices and veterans enrolled in the pharmacy programs which then required teaching more classes and holding classes in the evening and weekends. Pharmacy schools were not equipped to do this and it took heroic efforts to deal with the problems and lack of funding. An additional workload was the agreement of the faculties on a three-year program in 1944 and this was to be fully implemented by 1950. In 1957 there was agreement on a four-year program following the example of the United States.

In 1944 pharmacy education in Canada consisted of seven pharmacy schools (none in British Columbia until 1946, Newfoundland or P.E.I.). Two schools, the Ontario College of Pharmacy and the Maritime College of Pharmacy were operated by the profession. Four of the schools, Alberta, Saskatchewan, Ontario, and the Maritime College of Pharmacy required two years prelicenciate (apprenticeship) prior to entering the academic program. Programs consisted of 0 to 4 years of academic study. B.C. and P.E.I. provided no programs but used examinations for licensure. Alberta had a two-year program with an optional third year. Saskatchewan had a two-year program with optional 3rd and 4th years. Manitoba had a three-year program and Quebec a four-year part-time program in its two schools.

Small groups of pharmacy educators began to meet and in 1937 a Conference of Faculties was organized by Canadian Pharmaceutical Association at their Kingston conference. The outcome of the meeting was a recommendation to form a Conference of Faculties and to work toward standards for admission, curriculum and apprenticeship. Earlier, in 1932, the American Conference of Pharmaceutical Faculties (later known as the American Association of Colleges of

Pharmacy) had established a required four-year degree in pharmacy. Canadian academics attended some of the AACP meetings and were aware of the American Council on Pharmaceutical Education formed by the National Association of Boards of Pharmacy to set licensing standards based on recommended curriculum. Several standards were prepared between 1932 and 1942 when they became a requirement. As can be seen Canada was several decades behind in creating an educational standard for all the pharmacy schools.

The Canadian Conference of Pharmaceutical Faculties was created in 1944 mainly due to the leadership and support of the Canadian Pharmaceutical Association in order to develop a more uniform curriculum. Since 1907 the Canadian Pharmaceutical Association has as a goal the development of a common education and a national examination. A fifty year history of CCPF, later AFPC, was published describing the evolution of pharmacy education in Canada.

The shift from compounding to dispensing manufactured products was a major dislocation for pharmacy. Some saw this as a loss of professionalism. It was, however, a great opportunity as the flow of new products enabled the profession to be much more effective in treating patients' health problems. As the new products appeared, there also appeared a major flow of new information on drug mechanism of action and diseases. This resulted in a need for curriculum revision and a shift in emphasis from medicinal chemistry and physical pharmacy to pharmacy practice and therapeutics. The licensing bodies and hospitals described a role for pharmacy which was based on drug information and various sites in each province established drug information centres that collected information on drugs that could be accessed when there was a request for information. Unfortunately there were few requests as the pharmaceutical firms sent trained sales staff, mostly pharmacists at that time, to explain the drugs and their action to physicians. The direction that was most appropriate was clinical pharmacy and this was slowly beginning in some hospitals, more in the United States than in Canada.

The growth in the number and size of hospitals with the addition of more funding resulted in a demand for more hospital pharmacists. The Canadian Society of Hospital Pharmacists also grew quickly from its first meeting in 1947 and branches were established in each province by 1953. A journal was launched and by 1962 residency programs appeared. The Pharm.D. programs in the U.S. beginning in the 1950's were a base for clinical pharmacy and some Canadian students began to enroll in these post baccalaureate programs in the 1960's.

Provincial licensing exams were either given by the licensing body or delegated to the university. In either case they were compounding examinations until the 1970's. It was only with the growing acceptance of the Pharmacy Examining Board examinations that the provincial licensing requirements were evaluated and changes made.

The Canadian Conference of Canadian Pharmaceutical Faculties was well established by 1950 and to 1969 it had an increasingly important role in the maturation of pharmacy education and research. In large part this was due to achieving a permanent place in Canada's policy making organization – the Canadian Pharmaceutical Association – as well as much needed financial support. CCPF annual conferences and meetings were held in conjunction with the Canadian Pharmaceutical Association.

In early 1948 the first research conference became part of the annual meeting. By 1958, the fifth Canadian Pharmaceutical Research Conference was held in connection with the 50th anniversary of the pharmacy school at the University of Alberta on the topic of medicinal chemistry. Thirteen research papers were presented by the academics, two from the pharmaceutical industry and one from government – the Department of National Health and Welfare. At this time there were 24 students working on a Ph.D and 18 on a Masters degree in Canadian pharmacy schools. Alberta had initiated a Ph.D. program in Pharmacy in 1957, the first in Canada and the first graduate in 1961 (Ken James). The Committee on Graduate Studies and Pharmaceutical Research reported in 1956 that more than 30 recent pharmacy graduates were pursuing graduate studies, about half of them in Canada and half in the United States. From this point on the proportion of pharmacy graduates taking their graduate education in Canada gradually grew. The CCPF began to collect data on the number of graduate students, their field of study and their career fields on graduation. This was published annually. The impact twenty years later was evident as shown data from 1981 when one half of the pharmacy academic staff at the University of Alberta, had received their Ph.D. in Alberta.

Advances in graduate studies in the pharmaceutical sciences enabled many pharmacists to pursue careers in the forensic sciences. Beginning in the 1950's a steady stream of pharmacists entered and dominated the forensic field. From a historical point of view, the beginning of the forensic sciences in North America is attributed to August Vollmer the police chief at Berkeley California who transformed police work in a number of ways and is regarded as the "father of American policing". Vollmer collaborated with university academics in solving cases and through communication with Hans Gross, an Austrian criminologist, became interested in forming a forensic unit. He did this with the assistance of Dr. Albert Schneider, a professor in pharmacy from San Francisco, who joined the department and ran the first crime laboratory.

During the 1950's Canada was engaged in the Cold War and under the threat of nuclear attack. The Canadian militia were focused on civil defence and pharmacists had a responsibility for health supplies in the community. To train for this role pharmacists and pharmacy students took part in civil defence training courses.

In the Maritime Provinces pharmacy education made major changes after the War. The Maritime College of Pharmacy that had been established in 1925, and was associated with Dalhousie University, grew in size and performance under the leadership of Dean George A. Burbidge. Nova Scotia and New Brunswick were joint partners in the initiation of the Maritime College of Pharmacy and Prince Edward Island joined in 1950 when the program became a three-year degree. Dean Burbidge was actively involved in national pharmacy activities and is now recognized by having his name attached to the award for the student with the highest marks in the Pharmacy Examining Board examinations. After his death in 1943 an Acting Dean, J.D. Walsh, led the program until 1952 when J. Esmond Cooke, a pharmacist with a long experience in Nova Scotia pharmacy organizations, became Dean. He was Dean until 1961 when the Maritime College of Pharmacy became part of Dalhousie University as the College of Pharmacy under the direction of Dr. J. Gordon Duff and a four-year program was initiated.

In Quebec the University of Montreal began as a branch of the University of Laval in Quebec City (1906-1920). The pharmacy program which was in effect during this time became a school

of pharmacy in the newly independent university under Dean Conant who provided exceptional academic leadership, not only in pharmacy but also in establishing other faculties in the university. On his death in 1938 Dr. Laurence became Dean for the next 10 years and saw the school achieve Faculty status in 1943. In 1948 Alfred Larose, a long time staff member, became Dean and initiated a four-year degree program. He continued as Dean until 1960. In the 1940's a professional master's degree (M.Ph.) requiring an additional year of study and a professional doctorate (D.Ph.) requiring two additional years of study and a thesis, were established. There were financial difficulties in this period that slowed the development of a four-year degree program. There was a problem with admissions as well since the licensing body offered an examination for students wanting to enter pharmacy and the university was obligated to accept them. It took many years and a good deal of political maneuvering to establish the university's authority in this regard. Another problem in the same period was that all students entering university took the basic arts degree that was offered through the classical colleges. This added several years to the academic program of pharmacy students and was often deficient in the scientific preparation. Dr. Roger Larose was Dean from 1960-66 and greatly strengthened the research base of the Faculty. When the Hospital Insurance program was launched in Canada, the impact in Quebec was dramatic as the religious orders that ran the hospitals were now superceded by government which provided more resources and set higher professional standards. Pharmacy educators responded to the need for hospital pharmacy education by establishing a master's degree in hospital pharmacy in 1961, the first in Canada. (In 1962 Laval University offered a certificate in hospital pharmacy). Specialization in the fields of community pharmacy, industrial pharmacy and research were also offered. In 1963 Montreal began offering M.Sc. and Ph.D. programs. Their academic staff had been bolstered by sending promising pharmacy graduates to France and the United States with some funding support.

Throughout the period 1945-69 the Quebec pharmacy schools were active participants in national pharmacy education endeavors. This was in contrast to the Quebec professional organizations that were sometimes supportive and sometimes opposed to national initiatives. Quebec membership in CPhA was spasmodic, sometimes they were members and sometimes they were not.

In Ontario the licensing body operated a teaching program that began a four-year program in 1948 under Dean R.O. Hurst. He was succeeded in 1952 by Dean Norman Hughes who provided exemplary leadership, not only in pharmacy education but also in professional pharmacy. In 1953 He became Dean of the Faculty of Pharmacy at the University of Toronto as the academic program was fully transferred to the university. Although the Ontario College of Pharmacy had operated the educational program for many years they did this in collaboration with the University of Toronto. With this move to the university the faculty immediately initiated a M.Sc. program and later, in 1963, a Ph.D. program with the first graduate in 1966 (Miss Joan A. Smith).

In Manitoba a three-year bachelors degree was initiated with the first graduates in 1943. In 1951 the School of Pharmacy (upgraded from a Department of Pharmacy) was established in temporary buildings on campus. Students entering the program in 1958 were enrolled in a four-year program and the apprenticeship requirement was dropped. Dean Randy Murray was appointed in 1959 and directed the construction of a new pharmacy building in 1963. The School

of Pharmacy celebrated its 50th anniversary in 1965.

The pharmacy schools in Alberta and Saskatchewan followed similar roads. Although Saskatchewan initiated its four-year program earlier all students enrolled after 1 January 1946 were in a four-year B.S.P. program. Dean Wesley MacAulay was Dean for most of the period 1946 to 1967. For some reason Saskatchewan graduates designate their academic achievement with a B.S.P. rather than the more common B.Sc.Pharm. An interesting sidelight was the initiation of a two-week refresher course for armed service pharmacists in 1957 which continued for many years.

In Alberta the three-year university course became mandatory in 1945 and the four-year program did not become mandatory until later with the 1968 graduates. Saskatchewan realized faculty status in 1926 and designated their program as a College of Pharmacy. In Alberta faculty status was not obtained until 1955 with Mervyn Huston as Dean. Dean Huston was the person who had the greatest impact on the development of graduate studies in pharmacy during this period and in promoting pharmaceutical sciences by having scientific papers published in the pharmacy journals. He was also a musician, public speaker (humorous), and a writer of books of humor for which he received the Leacock award.

In 1969 the Canadian Conference of Pharmaceutical Faculties changed its name to the Association of Faculties of Pharmacy of Canada (AFPC). This was suggested by an academic from Quebec as it would allow the same initials to be used in both English and French. In the United States the organizational title of conference of Pharmaceutical Faculties was also used until it was changes to the American Association of Colleges of Pharmacy (AACP). For some reason the term faculty became used to designate academic staff members rather than institutions and almost all of the United States pharmacy teaching institutions are either Colleges of Schools.

Pharmacy Examining Board of Canada

The Pharmacy Examining Board of Canada came into being in 1963. The profession through the Canadian Pharmaceutical Association established an Organizational Committee in 1957 for a national examination board for the purpose of:

(a) Preparing a draft of a federal act to provide for the establishment of such a board;
(b) Obtaining the approval of the licensing bodies and the other appointing bodies of such a draft, which would include an act, regulations and by-laws…;
(c) Requesting the Canadian Conference of Pharmaceutical Faculties to propose regulations and by-laws with regards to examinations and all matters pertaining to educational requirements;
(d) Implementing the accepted draft to the extent of forming a provisional board, the composition of which is to be presented to the CPhA Council on or before the annual meeting of 1959;
(e) Seeing that the necessary legal steps be taken for the submission of the draft and regulations and by-laws to the Secretary of Sate in Canada.

The advantages of such a board were stated as:

(a) It will assure the development and the maintenance of uniformly high academic standards

for pharmacy across Canada;
(b) It will place Pharmacy, in one more respect, on the same basis as its sister professions, medicine and dentistry;
(c) It will give pharmacy added prestige in the eyes of governments, of the Canadian public and, in fact, internationally;
(d) It will provide the best possible process for the transfer of the few pharmacists who at some time move from one province to another.

Later it had the advantage of assessing foreign educated pharmacists.

To create the board it was necessary to pass an Act of Parliament. This required either for the Government of the day to undertake to pass the legislation or to have a legislator introduce a private members bill. Two legislators who were pharmacists agreed to present a private members bill. Senator J.J. McKinley of Nova Scotia introduced the bill in the Senate and D.R. Mitchell agreed to sponsor it in the House once it passed the Senate. Over the period of a year it passed the Senate and House and Committee before receiving Royal Assent on 21 December 1963. The board that was appointed had representation from all the provincial licensing bodies, the Canadian Society of Hospital Pharmacists, the Canadian Conference of Pharmaceutical Faculties and the Canadian Pharmaceutical Association.

An immediate problem of the board was the need to set an examination in 1964. Unfortunately this was not possible and the first exams in 1965 over four days consisted of six subjects written by 25 students. In the next three years the numbers were 35,22 and 34. Since licensure in a province was met by graduation in that province there was little incentive to take an expensive examination unless one planned to move to another province. Manitoba was the first province to require PEBC for out of province registrants, later all provinces made this a requirement. Ontario in 1975 required all new registrant to have PEBC and then this spread to other provinces so now it is a requirement for all provinces. From 1965 to the present day there have been continual refinement of the examination process to make it more realistic and justifiable.

At the 1957 conference a four-year course was approved and the date for commencement was set in 1960. This would mean that all graduates beginning in 1965 would be graduates of a foru-year program. This new standard was largely met although at least one school was a year late.

Pharmaceutical Suppliers

British Drug Houses and Bristol expanded their operations and the Ames Company that had been operating a sales office established a Canadian branch in 1948. This was the beginning of a flood of new pharmaceutical firms entering Canada over the next twenty years. Riker entered Canada in 1950 and the next year G.D. Searle and Pfizer expanded their Canadian operations. The A.H. Robins Company of Canada was established in 1952 and The William R. Warner Company of Philadelphia and Toronto merged with the U.S. Chilcott Laboratories to form Warner-Chilcott. Arlington-Funk, a division of U.S. Vitamin and Pharmaceutical Corp located a Canadian firm in Montreal in 1953.

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