



Journal of Population Therapeutics & Clinical Pharmacology

In Memoriam

DOI: 10.15586/jptcp.v26.i3.656

Dr E. Keith Borden: Inaugural president of the Canadian Association for Population Therapeutics

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Submitted: November 15 2019. **Accepted:** November 15 2019. **Published:** December 6 2019.

Dr E. Keith Borden passed away in Simcoe, Ontario, on July 17, 2019 at the age of 87.¹ He played a foundational role in the establishment of the Canadian Association for Population Therapeutics (CAPT).

In the early 1990s, the need for a Canadian association focusing on pharmacoepidemiology, pharmacoconomics, pharmaceutical policy, and appropriate methods to pursue these activities was discussed for some years at international conferences. However, it was Keith who took the leadership role in the local organization and financing of the first two meetings of the Canadian Pharmacoepidemiology Forum in Toronto in 1993 and 1994.

The local organization activities of a conference are frequently under-appreciated when things go well, which they did. Attendees at the 1993 and

1994 meetings liked what they saw and were enthusiastic for more. We have had leadership roles as local organizers and fundraisers for CAPT and other associations and can appreciate the amount of time and effort required to organize and resource a successful conference, especially one with no precedent. At the 1996 meeting, where the CAPT came into existence, Keith became CAPT's inaugural president and steered the association through its first year. He continued to play a major role in CAPT's organization for several years.

Born in 1932, Keith grew up in Montreal and, despite living for many years in the United States and Ontario, always considered himself to be a Montrealer. He obtained his BA from Loyola University in 1952 and went on to graduate 4 years later from McGill University as a physician

specializing in endocrinology. He later pursued an MS in epidemiology and statistics at the University of Texas at Houston.

His career in the pharmaceutical industry included senior leadership roles in The Upjohn Company in the United States and Ciba-Geigy/Novartis in Canada. While he was with Upjohn in the late 1970s, Keith and his colleague John Lee performed a feasibility study in which staff in 11 U.S. pharmacies registered more than 70% of patients receiving an oral antibiotic, and a subsequent questionnaire sent to the patients asking about benefits and problems during their use of the drug achieved a completed response rate of over 90%.² Borden and Lee concluded that larger systems were viable and could be established at a reasonable cost. This was a pioneering work that moved post-marketing drug surveillance from its post-thalidomide passive state toward a more active approach³ and has been cited numerous times.

In the United States, other types of drugs were studied using the same methodology, while a pretest of the method was performed in Canada.⁴ The approach was revived in the 1990s to study drug utilization in the Pharmacy Medication Monitoring Program at McMaster University,⁵ although patient questionnaires were administered by telephone. In both the United States and Canada, using pharmacies to identify appropriate patients and collecting post-marketing information on drug use directly from patients was shown to be a practical option with less potential bias than relying on physicians to enroll patients and report subsequent events.⁶

In 1997, Keith became a pharmacoepidemiology consultant working with the pharmaceutical industry, the federal government, and academia. Keith joined us in the early 2000s as a team member in a project to examine the scientific basis for procedures used to determine cost-effectiveness of new drugs in five Canadian provinces. He played a major role in interviewing provincial officials and representatives of the manufacturers

of five recently-introduced drugs about the processes. The results demonstrated that numerous flaws existed in the system of evaluating and listing drugs for reimbursement in provincial formularies, leading to significant disparity in reimbursed drugs.^{7,8} Keith strongly felt that Canada should do better.

Keith Borden was one of the innovators in the identification and evaluation of post-marketing benefits and risks in the real world⁹ which appeared in the pharmaceutical industry, government, and academia in the 1960s–1990s that we rarely see today. He was among the pioneers of pharmacoepidemiology, and attended the Belmont Conference,¹⁰ which established the ethical principles and guidelines for research involving human subjects that are used today. He was an ardent advocate for appropriate methods to be used to identify and evaluate the risks and benefits of prescription drugs. Keith should particularly be remembered for his instrumental role in establishing CAPT, his achievements in pharmacoepidemiology, his superb sense of humor, and his intriguing way of looking at difficult challenges.

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