History of adult endocrinology & metabolism at Dalhousie University

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This article provides a historical perspective of the Division of Endocrinology & Metabolism in the Department of Medicine at Dalhousie University from 1900 to 2025. The full-time members of the Division grew from three internists at its inception to eight Royal College certified Endocrinologists at present. In addition, several community endocrinologists and cross appointed faculty members are now affiliated with the Division. The Division's ambulatory care service has evolved into many subspecialty clinics with a broader research focus spanning both clinical and basic sciences, and the Division is one of the highest grossing research groups in the Department of Medicine. Finally, Division members have given back to society by assuming leadership roles in various national and regional organizations.

Introduction

Endocrinology & Metabolism at Dalhousie University can be traced back to the beginning of the 20th century. Halifax Medical College became Dalhousie Faculty of Medicine in 1911.[1] In 1900, Halifax Medical College's final written examination in Medicine had a question: "Describe the important clinical features of diabetes mellitus" thus implying diabetes was covered in the curriculum then. In the 1911-1912 Dalhousie Faculty of Medicine Calendar, it was recorded: "A course of seventy-five lectures in which diseases of the digestive, circulatory, respiratory and genitourinary systems, blood and ductless glands will be discussed in the third year".[1]

In 1933, when the Dalhousie Faculty of Medicine was formally organized into departments, Dr. Kenneth Mackenzie (1880-1958) was appointed the first Head and Professor of the Department of Medicine.[1,2] He had been the Head of the Victoria General Hospital's Department of Medicine since 1928. In 1931, he recruited Dr. Clyde W. Holland (1896-1971) as Lecturer in Medicine. In 1935, Dr. Holland was assigned 12 hours to give lectures on blood diseases and diabetes.[1] As far as we are aware, he was the first general internist at Dalhousie who was interested in Endocrinology & Metabolism.

In 1946, when Dr. Holland became the second Head and Professor of the Department of Medicine, he increased the clinical teaching-staff, including Dr. Daniel J. Tonning (1911-2002), a general internist interested in endocrine and metabolic disorders.[1] Thereafter, Dr. Tonning became responsible for Endocrinology & Metabolism teaching, and lectures on the "ductless glands" were added in the fourth-year undergraduate curriculum. When Dr. Holland suffered a major heart attack and resigned as Head in 1952, an Administrative Committee took over the administration of Dalhousie Department of Medicine.[1,2] One of the four committee members was Dr. Martin M. Hoffman, who had moved to Dalhousie from McGill in 1950. He was another general internist interested in Endocrinology & Metabolism, and Nephrology.

In the early 1980s, Dalhousie Department of Medicine formally introduced the division system to further develop clinical care, teaching and research in the sub-specialties of internal medicine. In 1981, the academic Division of Endocrinology & Metabolism (the Division) was formally established. After a national search, Dr. Meng Hee Tan was appointed the first Head of the Division.

This article provides a historical perspective of Endocrinology & Metabolism at Dalhousie from 1900 to 2025. We share information on this subspecialty group's

faculty, administration, clinical, education, and research programs, as well as the faculty's contributions to specialty societies and regional, national, and international organizations. This article draws primarily on personal recollections and accounts from faculty members, including the authors.

Faculty

General internists with an interest in endocrine and metabolic disorders provided care to patients with these disorders before the Royal College Subspecialty of Endocrinology & Metabolism was introduced in Canada in 1985. The 27 physicians providing such care from 1933 to 2024 are listed in Table 1. A heterogeneous group, they come from 6 countries and graduated from 12 different medical schools.

The Division has greatly benefitted from collaborating with multiple clinical and non-clinical services to expand its clinical, teaching, and research mandate. In 1981, Dr. Morris Givner (Pathology) was cross appointed with the Division. Subsequently, both Drs. Ur and Imran had a lengthy and productive collaboration with the laboratory of Dr. Michael Wilkinson (Obstetrics & Gynaecology and Physiology & Biophysics). Currently, Drs. David B. Clarke (Neurosurgery), Younes Anini (Physiology and Obstetrics & Gynecology), and Remigius Agu (Pharmacology) have cross appointments with the Division.

Administration Leadership

Since its inception in 1981, there have been five Heads and one Acting Head* of the Division:

1.	Dr. Meng Hee Tan	1981-1996
2.	Dr. Samuel E. York *	1996-1998
3.	Dr. Jack R. Wall	1998-2002
4.	Dr. Ehud Ur	2002-2008
5.	Dr. Stephanie M. Kaiser	2009-2020
6.	Dr. Syed Ali Imran	2020-present

Education Program

The Division maintains a strong education program in keeping with the evolving clinical demands. We provide undergraduate, postgraduate, and continuing medical education as members of Dalhousie's Faculty of Medicine, sharing our knowledge and clinical expertise while learning from students, residents, and other healthcare colleagues (Figure 2). In 1986, the Division established a training program in Subspecialty of Endocrinology & Metabolism Certificate of Special Competence. Since its inception, the Program Directors have included:

1.	Dr. Meng Hee Tan	1986-1988
2.	Dr. Sethu K. Reddy	1988 – 1995
3.	Dr. Ehud Ur	1997 – 2002
4.	Dr. Stephanie M. Kaiser	2003 – 2013
5.	Dr. Shirl Gee	2013 – 2020
6.	Dr. Churn-Ern Yip	2020 – present

With the initiation of the Dalhousie Medicine New Brunswick (DMNB) satellite campus in 2010, community-based endocrinologists in New Brunswick have also been involved in teaching the undergraduate students and post-graduate residents.

Clinical Program

The clinical program primarily consists of inpatient consultation service and ambulatory care clinic services. The historical information in this section is primarily based on the accounts of senior faculty members, Drs. York and Tan as well as other individuals listed in the acknowledgment section.

Inpatient Consultation Service

In the 1950s, there was a four-bed Metabolic Unit in the Victoria General Hospital West Annex. Relocated in the early 1970s to Ward 3B of the main hospital, it remained operational until 1981. That year, during the re-distribution of inpatient beds in the Department of Medicine, the Division's inpatient beds were discontinued, trans-

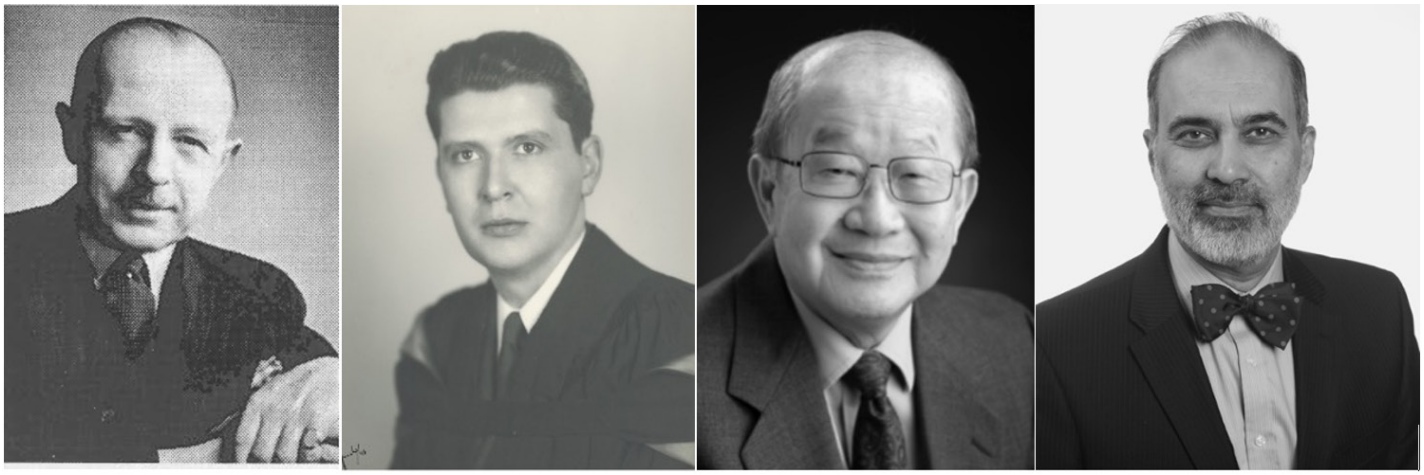

Figure 1 | Two Early Faculty Members and Two Division Heads
From left: Drs. Clyde W. Holland, Martin M. Hoffman, Meng Hee Tan, & S. Ali Imran

Table 1 | Physicians who provided care to patients with Endocrine and Metabolic disorders at Dalhousie (1930s-2025)

	Native of	Medical School	Time at Dalhousie	Postgraduate training	Focus of care	Status after Dalhousie
1. Clyde W. Holland	Halifax, NS	MDCM Dal 1923	1931-62	Harvard, Boston	Diabetes mellitus	Retired
2. Daniel J. Tonning	Saint John, NB	MDCM Dal 1938	1946-80	Harvard & McGill	General Endocrinology	Retired
3. Martin M. Hoffman	Saint John, NB	MDCM '47; PhD '43 McGill	1950-52	McGill	Diabetes mellitus	Resigned to join McGill
4. William I. Morse	Paradise, NS	MDCM Dal 1945	1950-66	Harvard & McGill	General Endocrinology	Left to practice in Yarmouth
5. John E. Bethune	Berwick, NS	MDCM Dal 1953	1958-61	McGill, Harvard & University College Hosp, London, UK	Calcium metabolism disorders	Left for USC
6. William C. Nicholas	Canso, NS	MDCM Dal 1958	1964-71	St. Johns, Toronto, & Middlesex Hosp, UK	General Endocrinology	Left for McMaster
7. Samuel E. York	Hartford, NB	MDCM Dal 1959	1965-2002	Toronto	Calcium metabolism, general endocrinology	Retired
8. E. Carl Abbott	Wesleyville, NL	MDCM Dal 1959	1969-2008	Toronto, Middlesex Hosp. UK	Hypertension, adrenal disorders, general endocrinology	Retired
9. Allan H. Shlossberg	Halifax, NS	MDCM Dal 1964	1971-2003	McGill, Sussex, UK. Toronto.	General endocrinology	Retired
10. Sonia R. Salisbury	Montreal, QC	MDCM McGill 1959	1973-2010	McGill	Pediatric endocrinology	Retired
11. Meng Hee Tan	Kuala Pilah, Malaysia	MD Dal 1969	1975-1996	Harvard & UCSF	Diabetes, dyslipidemia, general endocrinology	Left for Becton Dickinson
12. Roger S. Rittmaster	Camden, ME	MD Tufts 1976	1985-1999	Maine Med Center & NIH	Androgen metabolism, hirsutism, thyroid disorders, and osteoporosis.	Left for Glaxo Smith Kline
13. Sethu K. Reddy	St. Johns, NL	MD Memorial 1980	1988-1995	MUN, Toronto & Harvard	Diabetes mellitus, general endocrinology	Left for Cleveland Clinic
14. Elizabeth A. Cowden	Glasgow, UK	MBBS Glasgow 1970	1996-2005	Glasgow and Manitoba	General endocrinology	Returned to Manitoba
15. Richard S. Rowe	Adelaide, AU	MBBS Adelaide 1970	1996-2005	Dalhousie, Toronto & Manitoba	General endocrinology	Returned to Manitoba
16. Ehud Ur	London, UK	MBBS London 1982	1997-2008	St. Bartholomew Hospital, London	Obesity, pituitary, diabetes & dyslipidemias	Left for UBC
17. Jack R. Wall	Adelaide, AU	MBBS Adelaide 1967. PhD London 1977	1998-2002	Adelaide AU, Guys Hosp, UK, Harvard and Tufts.	Thyroid disorders	Left for Napean Clin School, Sydney, AU
18. Shirl Gee	Calgary, AB	MD Alberta 1995	2001-present	Dalhousie & McGill	Reproductive disorder, general endocrinology	Current faculty
19. Stephanie M. Kaiser	Fredericton, NB	Toronto 1984	2002-2023	Memorial & McGill	Bone disorders, general endocrinology	Retired
20. Syed Ali Imran	Lahore, Pakistan	MBBS Punjab 1987	2002-present	UK & Dalhousie	Neuroendocrinology and thyroid oncology	Current Head of Division
21. Thomas P. Ransom	Toronto, ON	MD Toronto 1998	2003- present	Toronto & Dalhousie	Obesity, diabetes dyslipidemias, general endocrinology	Current faculty
22. Barna De	Chicago, USA	MD Harvard 1998	2012-present	Harvard & Dalhousie	General endocrinology	Current faculty
23. Dale Clayton	NB	MD Dal 2003	2008-2010	Dalhousie	General endocrinology	Left for BC
24. Churn-Ern Yip	Calgary, AB	MD St George's Med School 2006	2012-present	Alberta & Dalhousie	General endocrinology, male hypogonadism	Current faculty
25. Ferhan Siddiqi	Bedford, NS	MD Toronto 2008	2014-present	Dalhousie & Toronto	General endocrinology, adrenal disorders	Current faculty
26. Vicki Munro	Edmonton, AB	MD Alberta 2011	2021-present	Dalhousie	General endocrinology, thyroid oncology	Current faculty
27. Nadine Vaninetti	Dominion, NS	MD Dal 2012	2024-present	Dalhousie	General endocrinology, bone disorders	Current faculty

forming the Division into a consultation service for inpatients at the three teaching hospitals together with ambulatory care clinics.

Ambulatory Care Clinic Services

The field of Endocrinology & Metabolism has evolved with a rapid expansion of diagnostic and therapeutic options such as new agents and insulin delivery systems, advances in molecular biology with new therapies for neuroendocrine tumours, digitization of healthcare delivery such as One Patient One Record and artificial intelligence in management algorithms, etc. These trends have led to a concomitant expansion of the Division's ambulatory clinic service with more sub-specialty clinics (Figure 3).

The Division started a community endocrinology service in the late 1990s when Drs. Shlossberg and Abbott set up practices in the community until their retirement. Currently, in the Maritimes, there are up to ten (the number fluctuates) community endocrinologists who are affiliated with the Division.

Endocrine Testing Unit

Before 1981, all patients were routinely admitted as inpatients for endocrine testing. With the growing need for endocrine testing, the Ambulatory Endocrine Testing Unit, staffed by a full-time nurse, was first established in 1986 and was based at the Halifax Infirmary. The unit is currently staffed by two senior nurses who provide dynamic endocrine testing service for the Division, as well as community endocrinologists.

Diabetes Education Center

In 1976 the first dedicated interdisciplinary Diabetes Education Center was established at Victoria General Hospital. The team comprised a physician, two nurse educators, and a dietitian. One of the nurse educators focused on inpatient diabetes care delivery. This novel Diabetes Education Center was a major milestone in diabetes care delivery and paved the way for multiple ensuing diabetes programs in Atlantic Canada.

In 1986, the Division was physically relocated from the Victoria General Hospital to the Halifax Infirmary, as was the Diabetes Education Center. This expanded to become the Nova Scotia Diabetes Center with three physicians, two dietitians, three diabetes nurses, and five other part-time staff (including a clinical psychologist, social worker, pharmacist, chiropodist, and occupational therapist). A new full-time dietitian devoted to dietary management of lipid disorders was also appointed and based at the Halifax Infirmary.

Undergraduate Education

All Division members participate in the bedside teaching of medical students as part of Dalhousie's core MD Curriculum. All teach undergraduate students Endocrinology & Metabolism in the Faculty of Medicine. In addition, some members also teach in the Faculty of Dentistry and Faculty of Health Professions.

Postgraduate Education

Dalhousie's training program for the Certification of Special Competence in Endocrinology & Metabolism was one of the first programs to be established in Canada in 1986.

For residents who have completed 3 years of accredited internal medicine training, the Division offers a two-year subspecialty Endocrinology & Metabolism residency training accredited by the Royal College of Physicians & Surgeons. We also offer Fellowship training in Endocrinology & Metabolism for subspecialists. The Division has also been actively involved in teaching specialty physicians seeking higher training. In 2015, Dr. Imran established a 12-month Dal accredited subspecialty fellowship program in neuro-pituitary disorders and thyroid cancer. Several international physicians have completed the fellowship and are working experts in various countries. Between 1986 -2024, we trained 42 residents and 7 fellows. Our trainees have established successful careers both in community and academic settings.

We also train IM residents who wish to do an Endocrinology & Metabolism elective. Furthermore, we also have residents rotate through our division from other disciplines, such as nuclear medicine, obstetrics and gynecology, psychiatry, and ophthalmology.

Continuing Medical Education

The Division's faculty participate in Dalhousie's Continuing Medical Education (CME) Programs related to Endocrinology & Metabolism at the local, regional, national and international levels. Annually, we present more than 40 sessions on a range of topics to family physicians, specialists, community-based endocrinologists, and other health professionals. In 1990, the Division, together with Dal CME, sponsored "Diabetes Mellitus in the 1990's Refresher Course". We also provide public education through community groups and provincial organizations.

Figure 2 | Division's Education Program

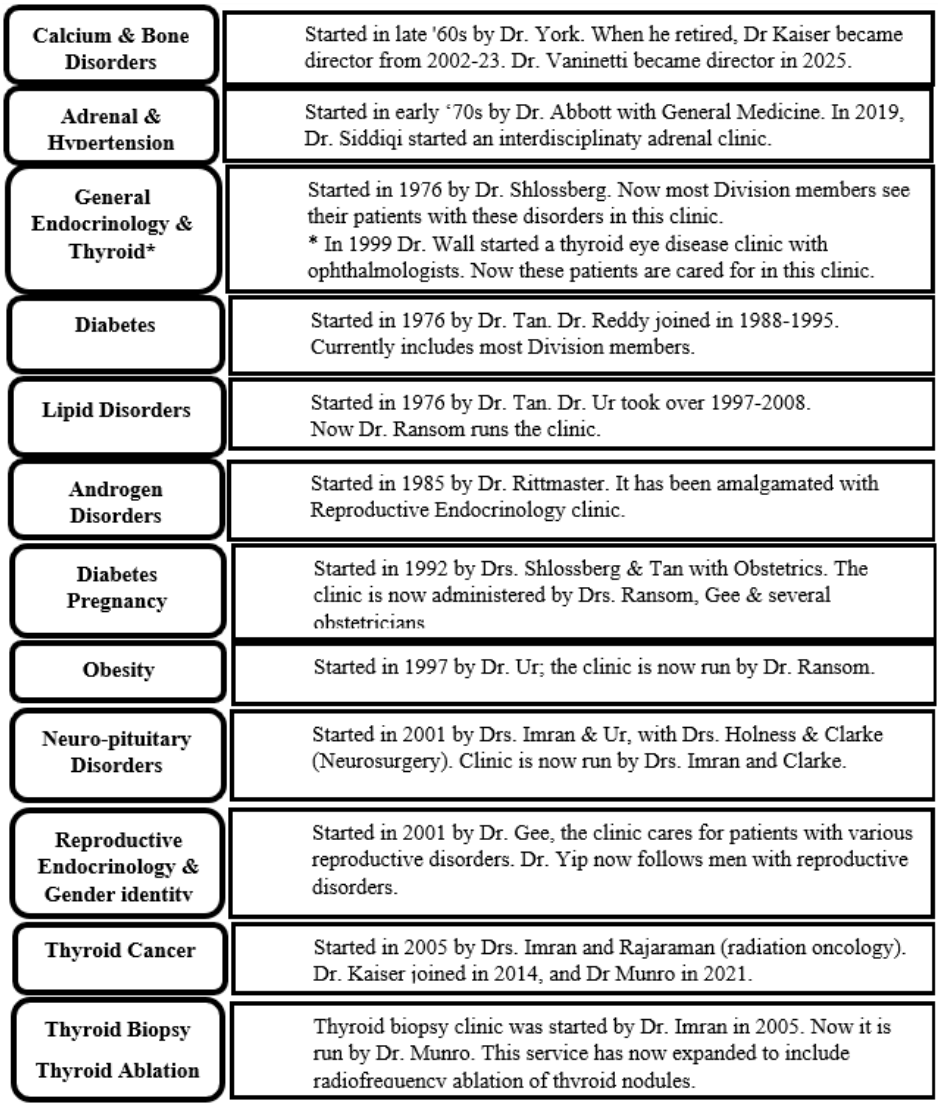

Figure 3 | Division's Ambulatory Care Clinics

The Diabetes Education Center evolved and expanded over time into a stand-alone service based in the community under the Department of Health with ongoing input from the Division members. Additionally, the Division established the inpatient diabetes case manager service to improve inpatient care and discharge planning of patients with diabetes. This service is currently staffed by two experienced certified diabetes educators, and supported by the on-call Endocrinology team.

Research

Clinical and Basic Science Research

Research is an integral component of any academic division. The spectrum of research done by Division members is broad and wide (Table 2).

In the 1950s and 1960s, research in the Division was mainly clinical. From 1970s on, basic science research became an integral part of the Division's research program, often done in collaboration with other Dalhousie faculties (e.g., Kinesiology), and other Medical School departments including, but not limited to: Biochemistry, Pathology, Physiology, Preventive Medicine and Community Health, Obstetrics & Gynecology, and Neurosurgery.

Drs. Tan and Reddy were cross-appointed in the Department of Biochemistry where their research laboratories were located. Dr. Tan collaborated with Dr. A. Bonen (Kinesiology) for over a decade. Dr. Rittmaster collaborated with the Departments of Biochemistry (Dr. Catherine Lazier), Physiology and Biophysics, as well as Urology (Dr. Richard Norman). Both Drs. Ur and Imran had a lengthy and productive collaboration with the laboratory of Dr. Michael Wilkinson (Department of Physiology & Biophysics and Obstetrics & Gynecology). Currently, Dr. Imran is cross-appointed in the Department of Surgery (Neurosurgery), and Dr.

Table 1 | Physicians who provided care to patients with Endocrine and Metabolic disorders at Dalhousie (1930s-2025)

Faculty	Clinical Research	Basic Science Research	Specific interests
Daniel J. Tonning	x		Metabolism
Martin M. Hoffman	x		Diabetes
William I. Morse	x		Hypoparathyroidism, gonads, obesity
Jack E. Bethune	x		Hypophosphatasia, adrenal
William C. Nicholas	x		General endocrinology
Sam E. York	x		Calcium disorders, thyroid
E. Carl Abbott	x		Adrenal and hypertension, thyroid
Allan H. Shlossberg	x		Pituitary, thyroid, adrenal; collaborated with Neurosurgery
Sonia R. Salisbury	x		Growth hormone, thyroid, pediatric endocrinology
Meng Hee Tan	x	x	Diabetes, dyslipidemias & thyroid; collaborated with Biochemistry, Kinesiology, Preventive Medicine, Community Health, Cardiology
Morris L. Givner	x		Hormones
Roger S. Rittmaster	x	x	Hirsutism, prostate cancer, androgen metabolism disorders, osteoporosis; collaborated with Biochemistry, Urology, & Physiology
Sethu K. Reddy	x		Diabetes, thyroid
Elizabeth A. Cowden	x		
Richard S. Rowe	x		
Ehud Ur	x	x	Pituitary, obesity, diabetes, dyslipidemias; collaborated with Physiology and Neurosurgery
Jack R. Wall	x	x	Thyroid eye disease; collaborated with Ophthalmology
Shirl Gee	x		Reproductive endocrinology
Stephanie Kaiser	x		Osteoporosis, metabolic bone disorders, lipid disorders, and type 2 diabetes
S. Ali Imran	x	x	Neuro-pituitary disorders, adipokine signaling, and thyroid cancer; collaborated with Physiology and Neurosurgery
Tom Ransom	x		Nutrition, dyslipidemias, obesity, diabetes
Barna De	x		Diabetes care delivery
Churn-Ern Yip	x		Technology in diabetes care delivery
Ferhan Siddiqi	x	x	Epigenetics of diabetes kidney disease in collaboration with group at U Toronto; quality improvement
Vicki Munro	x		Thyroid
Nadine Vaninetti	x		Bone disorders

Siddiqi in the Department of Physiology.

In 2022, under the supervision of Dr. Imran, the Division established a peer-reviewed internal research fund for all Division members and trainees to promote research. This program provides seed funding for research with emphasis on resident-led projects. Several Division members and trainees have successfully received funding through this program.

Clinical Trials

Interest in multicenter clinical trials blossomed in the mid-1980s at Dalhousie. The first Canadian Clinical Trials Colloquium was held in Halifax in 1986, which was organized by the Dalhousie Department of Medicine Research Committee and chaired by Dr. Tan. The Division has a well-established and robust clinical trials program. From the mid-1980s onwards, this included key trials in diabetes and lipid disorders (Drs. Tan, Ur, and Ransom), hirsutism (Dr. Rittmaster), bone disorders (Dr. Kaiser), pituitary disorders and thyroid cancer (Dr. Imran), and adrenal disorders (Dr. Siddiqi).[5-13] Together, the Division's clinician-scientists and their research coordinators have enabled our patients to benefit from cutting edge research in diabetes and endocrinology.

Division's Physical Location

When the Division was first established, it was based at the Victoria General Hospital. In 1986, the Division was physically relocated to the Halifax Infirmary when Dr. Tan was appointed Head of the Department of Medicine. The Endocrinology and Diabetes/Dyslipidemia

Clinics also relocated from the Victoria General Hospital to the Halifax Infirmary.

In 1988, when the Halifax Infirmary and Camp Hill Hospital merged to become the Camp Hill Medical Center, the Division's physical location remained unchanged. When the Victoria General Hospital and Camp Hill Medical Center merged in 1997 to become the Queen Elizabeth II Health Sciences Center, the Division was relocated to the Victoria General Hospital campus shortly after. Due to expansion of the Halifax Metro area, the Division initiated various off-site clinics during the past ten years, including the Cobequid Community Health Centre (2015) in Sackville and more recently the Bayer's Lake Community Outpatient Centre (2023).

Giving Back to Professional and Community Organizations

Throughout the Division's history, members have consistently provided leadership at national and international Endocrinology & Metabolism forums as follows:

Subspecialty of Endocrinology & Metabolism in Canada: Before the 1980s, Endocrinology & Metabolism was not recognized as a subspecialty by the Royal College of Physicians of Canada. Dr. Salisbury played a key role in the Canadian Society of Endocrinology & Metabolism's negotiations with the Royal College to establish formal recognition. As a result, The Royal College Subspecialty of Endocrinology & Metabolism Certificate of Special Competence was approved in 1983 in Canada, and the first examination of this subspecialty certificate was held in 1985.

Royal College Specialty for Endocrinology & Metabolism: Three Division members served on the Royal College Specialty Board Exam for Endocrinology & Metabolism: Dr. Salisbury (1985-1987), Dr. Tan (1987-1992), and Dr. De (2015-present). Two Division members served on the Royal College Endocrinology & Metabolism Subspecialty Committee: Dr. Tan was a member from 1987 to 1996, and Dr. Kaiser was Chair from 2004 to 2010.

Canadian Society for Endocrinology & Metabolism: Three Division members served as President of the Canadian Society of Endocrinology & Metabolism: Dr. Salisbury (1984-1986), Dr. Rittmaster (1998-1999), and Dr. Kaiser (2013-2015). Division members maintained a strong role at the national endocrine stage with Drs. Imran, Siddiqi, and Munro holding various council or executive positions with the Canadian Society of Endocrinology & Metabolism.

Diabetes: Dr. Tan was President of the Canadian Diabetes Association (1989-1991), Vice-President of the International Diabetes Federation (1991-1997), and first Chair of the Canadian Diabetes Advisory Board for Health Canada (1988-1995). Dr. Tan chaired the Expert Panel of the first Canadian Consensus Conference on "Clinical Practice Guidelines for Management of Diabetes Mellitus" from 1991-1992.14 Since then, Division members (Drs. Imran and De) have played key roles in expanding diabetes care, including establishing national and regional diabetes care guidelines.[15,16] Dr. Tan was an advisor on diabetes to the World Health Organization (1992-1995).

Fertility and Andrology: Dr. Rittmaster was President of the Canadian Fertility and Andrology Society (1993-1994).

Osteoporosis: Dr. Kaiser served as a member of the Executive of Osteoporosis Canada (1999-2000 and 2004-2020).

Thyroid: Drs. Imran and Munro have been involved in the national thyroid cancer guidelines.[17]

Regional Programs – The Atlantic Endocrine Society: In 1990, Dr. Rittmaster and Dr. Carol Joyce (Memorial University) discussed the formation of the Atlantic Endocrine Society. They organized the inaugural Atlantic Endocrine Society Conference, bringing together physicians and scientists interested in Endocrinology & Metabolism for a weekend conference at Dalhousie. The Atlantic Endocrine Society has continued with annual conferences rotating through various Atlantic provinces and is strongly supported by the Atlantic endocrine community. The conference provides a venue for local clinical and research faculty to interact with national and international speakers invited to the meeting.

Provincial Program – Diabetes Care Program of Nova Scotia: In 1991, the Nova Scotia Department of Health established the Diabetes Care Program of Nova Scotia (DCPNS) to standardize diabetes education programs across the province.[18] Dr. Tan was the founding Medical Director (1991-1996), and Dr. Shlossberg represented the Dalhousie Faculty of Medicine in the DCPNS Board of Directors. Dr. Salisbury became the second Medical Director of DCPNS in 1997. Over the years, Drs. Ur, Imran, Ransom, De, Siddiqi and others have been involved with the DCPNS in various roles.

Chapter Eternal: We remember colleagues who left footprints in the Division's journey and have gone before us:

- Dr. Clyde W. Holland (1896-1971)
- Dr. Daniel J. Tonning (1911-2002)
- Dr. Martin M. Hoffman (1916-1983)
- Dr. William I. Morse (1923-2004)
- Dr. Jack E. Bethune (1927-2018)
- Dr. Allan H. Shlossberg (1939-2008)
- Dr. Sonia R. Salisbury (1935-2021)
- Dr. E. Carl Abbott (1936-2024)

Acknowledgement

We would like to thank Drs. Sam E. York, William C. Nicholas, Sethu K. Reddy, Roger S. Rittmaster, Morris L. Givner, Jock T. Murray, Carol Joyce, and Brian B. Hoffman for providing information in the writing of this article. In Figure 1, Dr. Holland's photo is adapted from Reference 1, and Dr. Hoffman's photo is courtesy of Dr. Brian B. Hoffman.

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