

## Original Article



# Global Variations in Curriculum and Syllabus for Endocrine Surgery Training Programs: a Report

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## ABSTRACT

**Purpose:** The aim of this study is to find out information relevant to the certification of trainees in surgical endocrinology specialty—duration of training, entry/exit criteria, curriculum and accreditation agency.

**Methods:** Information related to endocrine surgery training programs was archived from electronic resources such as publications, web portals of official endocrine surgery professional bodies and institutions offering such courses and the data was analysed.

**Results:** The 75 trainee positions were identified globally in 58 institutions—28 in North America, 5 in Latin America, 17 in Australia and New Zealand, 10 in Asia, 25 in Europe and none in Africa. The average length of training leading to award of fellowship/diploma/degree ranged from 1 to 3 years. The curriculum of majority (n=58) of these programs includes thyroid, parathyroid, adrenal and neuroendocrine tumors although in many centres it also includes breast (n=25, 43%), diabetic foot (n=12, 21%), thymus (n=17, 30%) and salivary gland (n=4, 7%) thus suggesting variation worldwide. The assessment of trainees at the end of course also differs.

**Conclusion:** There are no uniform guidelines across the world for endocrine surgery training programs unlike those developed for other sub-specialities of surgery.

**Keywords:** Curriculum; Accreditation; Certification; Surgical education

## INTRODUCTION

The global endocrine disease burden is expected to increase significantly over the next few decades (1,2). Thyroid cancer burden is increasing by 6.6% annually in the United States (3), and 100,000 new cases of primary hyperparathyroidism are diagnosed each year (4). In a recent publication by Wang and colleagues (5), they highlighted the significant deficiencies in tackling this rising burden. While there are many barriers in providing optimal endocrine surgery training on the global stage, some factors are related to the lack of a globally uniform and structured training programs.

Since the year 2000, there has been a gradual increase in the number of endocrine surgery training positions offered worldwide; from 23 in the year 2000 to approximately 75 in 2016.

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However, these training programs, which are offered by various institutions in the form of fellowships and diplomas, follow different accreditation process, e.g., some programs are accredited by the official endocrine surgery professional body of that country and others are accredited by the regulatory body of the institution or country.

Multiple studies have analyzed the training programs in developed countries mainly in USA and Canada (4,6-8). These research publications have identified wide variations in training recommendations, but they have sampled only a small proportion of countries, which limits the validity of the research. Currently, there is no published data mapping the curriculum and syllabus for all countries in the world. The aim of this study is to find out any information relevant to the certification of trainees in this specialization including duration of training, entry/exit criteria, curriculum and syllabus and accreditation agency.

## MATERIALS AND METHODS

Multiple sources were used to extract data on the training and certification of endocrine surgeons globally. An online search of MEDLINE, EMBASE, and the Global Health Library databases with the search terms “endocrine surgical training” and “endocrine surgery fellowship” was done to sort out studies published between January 1, 1979, and December 31, 2016. Synonyms for surgical trainees, such as resident, chief resident and registrar, were used in addition to alternative names for training programmes (for example surgical training, residency training and specialty training). Terminologies for specifically named surgical curricula were included with both full terms and acronyms. Web-search was done on American Society of Endocrine Surgery database ([www.endocrinesurgery.org](http://www.endocrinesurgery.org)), the International Endocrine Surgeons Society ([www.iaes-endocrine-surgeons.com](http://www.iaes-endocrine-surgeons.com)) database and the Brazilian Endocrine Surgical Society records ([www.endocrinologiacirurgica.org.br](http://www.endocrinologiacirurgica.org.br)), Australian and New Zealand Endocrine Surgeons (<http://www.endocrinesurgeons.org.au>), Belgian Endocrine Society (<http://www.endocrinesociety.be>), European Society of Endocrine Surgeons (<http://www.eses.cc/>), European Thyroid Association (<http://www.eurothyroid.com/>), French Endocrine Society (<http://www.sfendocrino.org/>), Japanese Society of Thyroid Surgeons (<http://square.umin.ac.jp/thyroidsurgery/>), Russian Partnership for Head and Neck Oncologists Specialists (<http://www.headneckonco.ru/>), Endocrine Society of Thailand (<http://www.thaiendocrine.org/>), British Thyroid Association, Association of Surgeons of Great Britain and Ireland, British Association of Endocrine and Thyroid Surgeons (<http://www.british-thyroid-association.org>, <http://www.asgbi.org.uk>, <http://www.baets.org.uk>), Indian Association of Endocrine Surgeons (<http://iaes.org.in/>). The final search was performed in December 2016. Data regarding a brief description of the programme, years of training required, endocrine surgery fellowship positions available, entry and exit criteria, funding, curriculum and the agency involved in accreditation of such fellowship/courses was identified and analyzed. Study did not involve human participants.

## RESULTS

Seventy-five trainee positions were identified globally in 58 institutions—28 in North America, 5 in Latin America, 17 in Australia and New Zealand, 10 in Asia, 25 in Europe and none in Africa. Worldwide distribution of available fellowship training programs and their accrediting bodies are shown in **Table 1**.

**Table 1.** Number of endocrine surgery fellowship/degree/diploma positions in India and worldwide (includes fellowships which are predominantly thyroid with head and neck surgery)

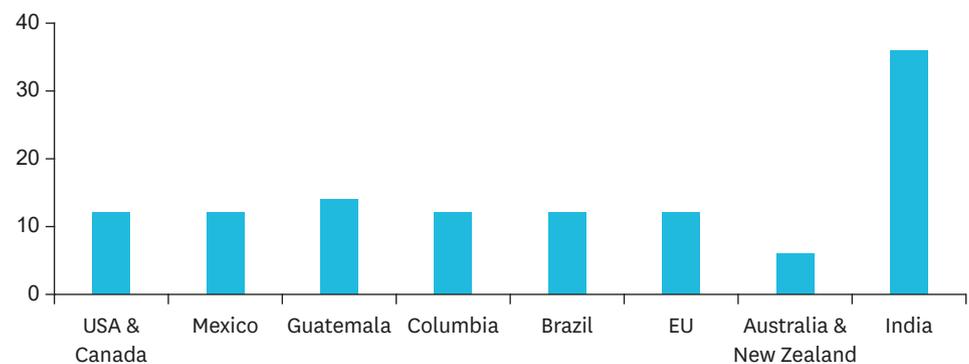
Country	Mode of entry	Accredited training position	Accrediting body
North America	National matching program		
USA		Yes	Association
Canada		Yes	Oncology Society
Mexico		Yes	University
Latin America	Interview based		
Brazil		Yes	Association
Australia and New Zealand	Interview based	Yes	Association
Europe	Interview through European Board of Surgery, Division of Endocrine Surgery		
Britain		Yes	Association
France		Yes	Association
European Union		Yes	Association
Russia		Yes	Head & Neck Cancer Society
Asia	National level entrance test plus objective assessment of clinical OSCE		
India		Yes	Medical Council of India

OSCE = objective structured clinical examination.

### 1. Duration of training

The average length of residency leading to an award of fellowship/diploma/degree ranged from 1 to 3 years. In the United States, the duration of an Endocrine Surgical Fellowship may vary depending on the design of the fellowship program, and the ultimate goals and type of practice pursued by the trainee. It is considered that a minimum of one year is required, although it may be advised that the trainee spend more than one year to meet their goals and objectives.

Given the large number of countries in Europe, the training is quite diverse. The shortest possible time for fellowship is one to two years. Training in Endocrine Surgery in Australia and New Zealand may be experienced with one of two main pathways. The first is during Advanced Surgical Training leading to the Fellowship of the Royal Australasian College of Surgeons (FRACS) in the specialty of general surgery. This is a 4-year program, and trainees may undertake a 6-month rotation either in endocrine surgery, breast and endocrine surgery, or oncology and endocrine surgery. The second pathway is post-fellowship training, i.e., after completion of the FRACS in general surgery. In Latin America, durations of fellowship are 14 months in Guatemala, 12 months in both Mexico and Brazil. Total duration of training in India is three years (**Fig. 1**).



**Fig. 1.** Country and minimum duration of training in months.

## 2. Curriculum

The curriculum of the majority (n=58) of these programs includes thyroid, parathyroid, adrenal and neuroendocrine tumors although in many centres it also includes breast (n= 25, 43%), diabetic foot (n=12, 21%), thymus (n=17, 30%) and salivary gland (n=4, 7%); thus, suggesting variation worldwide.

## 3. Entry and exit criteria

The assessment of trainees at the end of the courses also varies globally. Selection process and exit criteria are not uniform and it differ even within the same country. In India, after obtaining the first postgraduate degree, that is MD/MS/FCPS/DNB, one can go for further specialisation in medical or surgical fields. This involves a highly competitive entrance examination. The course involves three years of training followed by an examination including theory and practical assessment. The degree of the doctor of medicine (DM) or magister chirurgiae (MCh) is awarded after passing this examination. The American Association of Endocrine Surgeons initiated a formal fellowship match process in 2007. Since then, interest in endocrine surgery has grown, and the number of endocrine surgery fellowship positions have increased from 12 to 25 offered in 2013. In Turkey, Brazil, Mexico and Guatemala, the entry into a fellowship program is based on an interview.

## 4. Accreditation

Globally, fellowships in 55 centres are accredited by either official endocrine surgery association or a regulatory authority of the university or country (**Table 1**). For example in India, centres offering MCh must be accredited by Medical Council of India which is the central regulatory body for medical education in India.

## DISCUSSION

As recently reported by the Lancet Global Surgery 2030 commission (9), “*Treatment for surgical conditions, a broad range of diseases that represent approximately 30% of the global burden of disease and span 100% of disease sub-categories, remains out of reach for the majority of the world’s population. The Commission has a target of 5,000 procedures annually per 100,000 population by 2030 as a measure of met need for surgical and anaesthesia care. Reaching this target will require a broad expansion of surgical and health systems, including doubling of the surgical workforce within the next fifteen years. Expansion of surgical volume must be accompanied by a focus on quality, safety, and equity driven by local implementers.*” Thus, an expanded surgical workforce must be trained in providing quality surgical care. The association between volume and outcomes for complex surgical procedures is now well established. The same is true for surgical procedures for endocrine disorders as well and dedicated endocrine surgery department leads to an improved clinical outcome (10-14). A structured training programme that allows for a quicker assent to technical competence and rigorous assessments to evaluate a resident’s progress with respect to their procedural and technical knowledge is being recommended and the same is being implemented by most of the developed countries individually (15,16). American Surgical Association Blue Ribbon Committee Report on Surgical Education, 2004 has recognized the demand for sub-specialization in surgery and pointed out “One size no longer fits all.” Uncommon case materials are less efficiently distributed when they are used to train individuals whose ultimate goals do not focus in these areas. Education research is pushing towards competence-based advancement, replacing time-in-service. At present, subspecialty fellowship training is largely unregulated, unsupervised, non-uniformed, and uncertified

(8). Regional, national and international differences based on program philosophy and training structure have now become more visible due to global connectivity. The world has become increasingly interconnected and globalization now affects virtually every person's life. Increase in the flow of people, products, services, and information between and among countries and continents is having a dramatic influence on the world's health and health care delivery (17). Hence, in order to make the training more standardized and globally acceptable, many medical and surgical sub-specialities are now coming up with global curriculum and syllabus along with a minimum accepted duration of training.

A collaboration between the Society of Surgical Oncology and the European Society of Surgical Oncology has recently published their finding on variations in training of surgical oncologists and they have proposed for a global curriculum (18). The results of this study demonstrated significant global variations in the training paradigms of surgical oncologists. The 2 largest and leading surgical oncology societies in the world, the Society of Surgical Oncology and the European Society of Surgical Oncology, have developed a proposal for a global curriculum in surgical oncology, which is published in these journals (19). Similarly, the American Society of Clinical Oncology and the European Society of Medical Oncology have joined hands and have developed a global curriculum for medical oncology (20). As we can see, more and more global societies are taking up leadership charges and coming together to formulate a uniform training program relevant to that speciality.

Endocrine surgery has become a recognized super-speciality in the developed world, both among health care providers and general population. Initial pace of development of this branch was slow but it has gained momentum in the last decade. One of the foremost reasons for this acceleration is the introduction of a structured curriculum to formalize advanced training objectives and content leading to award of a degree or diploma. Recipients of endocrine surgery structured training programmes have spread and helped in establishment of new academic departments, leading to chain reaction. The objective of this investigation is to see if similar chain reaction is also happening in the developing countries, keeping India as a case study. Simultaneously, global scenario was also reviewed and results show an extremely variable landscape of global endocrine surgery training.

- It is noted that the duration of endocrine surgery training is extremely variable and ranges from 6 months to 36 months.
- Not all countries in the world have the capability to offer fellowship training domestically. Only developed countries have such training available with the exception of a few developing countries like India, Mexico, Brazil and Guatemala.
- There is no uniformity for entry and exit criteria.
- There is no uniform standards in the training programs.

It is time for International Association of Endocrine Surgeons and other prominent endocrine surgery associations worldwide to seize the moment and develop a global curriculum in endocrine surgery to tackle these discrepancies.

These results only offer a cross-sectional snapshot of current status of global endocrine surgery curriculum and syllabus. This review is limited by potential publication bias as data on syllabus is available only mostly from developed countries and the accuracy of the official websites with regards to its regular update was not determined. Furthermore, this study has limitations inherent to online surveys. Additionally, data obtained from web search was

not confirmed by any personal communication. The results of this study may not accurately reflect the current fellowship positions, entry and exit criteria and syllabus but it gives an approximate idea of the present day variations in endocrine surgery training programs.

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