

ICO Principles and Guidelines for Education of the Ophthalmic Specialist

The International Council of Ophthalmology's Task Force on Resident and Specialist Education outlined a curriculum to establish essential cognitive and technical ophthalmic skills.

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Medical and surgical specialist training provides residents with expertise in medical knowledge, patient care, and surgical skills, but it should also include the noncognitive domains of professionalism, communication, and interpersonal skills.

The first step in training a specialist ophthalmologist is to develop a content curriculum. In 2006, the International Council of Ophthalmology (ICO) created the Task Force on Resident and Specialist Education to develop an outline of the essential cognitive and technical skills needed by a modern, comprehensive ophthalmologist. The ICO curriculum provides a standardized content outline for ophthalmic training, but the precise local detail for implementation of the full curricular learning plan is left to the readers. This article describes the history and the outcome of the curriculum project and the future goals for revising the ICO curriculum.

HISTORY

In 2001, the ICO and the Academia Ophthalmologica Internationalis (AOI) published *Vision for the Future*, an international strategic plan to preserve and restore vision.¹ The first ICO Task Force on Resident and Specialist Training noted the following:

- Guidelines for ophthalmology training are not fixed and should not be viewed as rigid or mandatory;
- Training should combine the use of lectures; supervised patient care; and graduated, hands-on procedural

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and surgical experience, research, and independent study;

- Training should focus on acquisition of knowledge and skills and development of an appreciation for the importance of vision research, lifelong learning, and education of the public and other physicians;
- The curriculum should span approximately 3 to 5 years and prepare the graduating ophthalmologist for an examination or testing process that would lead to licensure, registration, or a related certification system;
- Designated training facilities should include the latest ophthalmic equipment and instruments; examining rooms dedicated to ophthalmic education; links to hospitals or other facilities for anesthesia, radiology, clinical testing laboratories, other diagnostic services, and modern surgical suites with appropriate equipment; and access to ophthalmic educational materials;
- A culture of learning and teaching should be established;
- Periodic assessments should include formal tests (oral or written) that require the demonstration of extensive knowledge in both basic and clinical sciences, and review

of case logbooks (surgical and nonsurgical) should regularly occur at each stage of the training process;

- Graduated levels of responsibility should be commensurate with a trainee's education and skill set;
- Various educational adjuncts should be available, including practice surgery on animal or outdated eye bank eyes, dissections of cadavers, videotapes, and Web-based systems of instruction;
- Candidates should regularly assist senior surgeons to acquire intraoperative skills and should acquire the ability to preoperatively select suitable surgical candidates and to perform adequate postoperative care; and
- Periodic audits of individual training programs should be performed.

The ICO's Task Force on Resident and Specialist Education gathered and analyzed representative documents regarding ophthalmic curricula from more than 30 countries. Based upon these and other related materials, an initial draft of the content curriculum was prepared and circulated to more than 100 representatives of the ICO, the AOI, and other transnational and national eye organizations, as well as ophthalmic leaders with a variety of subspecialty skills and expertise in Africa, Asia, Australia, New Zealand, Europe, North America, Central America, and South America. The draft document was also available on the ICO Web site and was presented at international meetings. The review process took more than 18 months.

OUTCOME

Curriculum format. The resulting ICO curriculum is an outline for three levels (basic, standard, and advanced) of supervised ophthalmic training at progressively more advanced levels.² The basic level of education corresponds to US postgraduate year 2, the standard level to US postgraduate year 3, and the advanced level to US postgraduate year 4. These corresponding levels of training are for comparative purposes only, as length of training varies across the world; they are not a

recommendation for duration or length of training. For instance, in locations with urgent and pressing clinical needs, marked abbreviations of the training program could provide the region with sufficient numbers of practitioners—both medical and surgical—although at reduced levels of competence in certain areas of knowledge. In other places, ophthalmic training may extend beyond the 3- or 4-year curriculum.

Both cognitive and technical skills are covered in each level of the curriculum, with some overlap within the standard and advanced levels. The following categories are included: optics; retinoscopy and refraction; cataract and lens; contact lens; cornea, external diseases, and refractive surgery; glaucoma; neuro-ophthalmology; ophthalmic histopathology; oculoplastic surgery and orbit; pediatric ophthalmology and strabismus; vitreoretinal diseases; uveitis; ocular oncology; low-vision rehabilitation; and ophthalmic practice and ethics. If training exceeds 3 years, exceptional mastery of select subspecialty areas can be achieved. Graduates of such programs are designated by various titles, such as fellows in North America.

The original ICO guidelines follow the traditional definition of a curriculum, but today we have introduced modern concepts that specifically outline aspects of teaching and learning, such as the duration, length, frequency, and timing of training; the location for instruction; who will be teaching, learning, and assessing the learning and teaching; and teaching and assessment methods.

Goal. It was not the goal of the initial ICO curriculum to encompass all the knowledge and skills of subspecialty areas, but mastering the advanced level of this curriculum will provide introductory and transitional knowledge and skills leading toward even higher levels of sophistication. Individuals at these subspecialty levels of training should also have accomplished the goals of the 3-year curricular outline that is offered here.

It is our intention that the ICO curriculum creates a standardized educational process that allows local customization of the content. The local and regional ophthalmic knowledge required to understand and treat patients in one part of the world may be different from that required in another. This is largely dependent on the prevalence or prioritization of various eye diseases in a specific region. Additionally, levels of economic and social development vary widely throughout the world, and ophthalmic and systemic treatments and techniques considered indispensable for one group of ophthalmologists in the developing world might be unattainable, unsuitable, or unimportant for others. Thus, the standards proposed by the ICO should be considered as aspirational guidelines and can be modified as

TAKE-HOME MESSAGE

- The first step in training a specialist ophthalmologist is to develop a content curriculum.
- The ICO has developed curriculum for basic, standard, and advanced levels of residency training. They are in the midst of creating curriculum for a fourth (very advanced).
- The standardized ICO curriculum was established to act as the foundation for developing clear and defined milestones of progression, providing benchmarks for gauging progress and performance.

The ICO curriculum outline should be considered a living work in progress that is designed to be revised and modified.

needed. Even among mature and well-financed governmental systems of health care delivery, this document should be considered a living work in progress that is designed to be revised and modified.

Noncognitive and nontechnical core competencies. Although specialty-specific ophthalmic cognitive and technical skills define the core of what it means to be an ophthalmologist, several noncognitive and nontechnical competencies are also important. In the United States, the Accreditation Council for Graduate Medical Education (ACGME) has defined some of these general competencies. Similar processes have occurred in the United Kingdom, Canada, and other parts of the world. By way of example, the ACGME core competencies include patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice.

REVISIONS TO THE CURRICULUM

The second ICO task force is in the midst of a revision process to update the curriculum, prioritize the content, and create a fourth level (very advanced) that could be used to form the basis for defining a fellowship-trained ophthalmic subspecialist. In this multiphased revision process, the ICO has solicited and vetted committee members and chairs of international content experts to define the core of what it takes to be an ophthalmologist.

It is our hope that a standardized ICO curriculum can act as the foundation for developing clear and defined milestones of progression, thus providing benchmarks for gauging progress and performance. Such milestones might include, for example, that the first-year resident can list the steps for performing the swinging flashlight test to detect a relative afferent pupillary defect (RAPD); that the second-year resident can demonstrate proficiency in the test to detect a RAPD under direct observation; and that the third-year resident can detect a RAPD and diagnose an optic neuropathy in five real-world patients and can detect a RAPD in a patient with only one working pupil. Ideally, this revised curriculum should link teaching goals and objectives to available teaching resources and to assessment tools that can verify the completion of individual ICO milestones. With these revisions in place, the ICO examination can be made to better align with the ICO curriculum, so

that the certification process mirrors the goals and objectives contained within the curriculum.

CONCLUSION

We envision the ICO curriculum as a living document and encourage educational programs to modify it as needed for local use. It has already been translated into multiple languages, including Spanish (available at <http://archive.icoph.org/pdf/icocurricressp.pdf>), and has been affirmed as a notable practice by the ACGME and the European Board of Ophthalmology.³ The first ICO curriculum was published in the European literature,⁴ and we hope to publish the results of the revision project in print or online. We invite all interested parties to contribute once the revised and updated ICO document enters its public comment phase. Ideally, we hope this tool finds a self-sustaining role in lifelong ophthalmic learning. ■

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1. ICO Web site. Vision for the Future: Strategic Plan for International Ophthalmology. http://www.icoph.org/resources/resources_detail/101/Vision-for-the-Future-Strategic-Plan-for-International-Ophthalmology.html. Accessed May 4, 2011.

2. ICO Web site. ICO Curriculum. <http://archive.icoph.org/ed/icoresident.html>. Accessed May 4, 2011.

3. ACGME Notable practice. <http://www.acgme.org/acWebsite/notablepractices/default.asp?SpecID=41>. Accessed May 4, 2011.

4. Tso MOM, Goldberg MF, Lee AG. Principles and guidelines of a curriculum for education of the ophthalmic specialist. *Klin Monatsbl Augenheilkunde*. 2006;223(4):51-548.