Acquiring and ensuring competence in EUS in the 21st century

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The Utstein Formula for survival in resuscitation states that Patient Survival = Medical Science x Local Implementation x Educational Efficiency.¹ When applying the same formula to EUS, it is evident that EUS medical science has evolved rapidly over the past decade.² Technological advances, innovative use, and an extensive amount of scientific literature have established EUS as a fundamental and indispensable modality for the diagnosis and management of a variety of gastrointestinal and pulmonary disorders. Scientific societies, international guidelines, and dedicated journals such as the EUS Journal have been successfully established and have fuelled the expanding implementation of EUS worldwide. However, the optimal efficacy and patient safety of EUS procedures require that the Educational Efficiency is also state-of-the-art. Ultimately, the quality and successful performance of a EUS procedure depend on expert hands and this EUS Journal Special Education Issue sheds a spotlight on evidence-based training and education to ensure that future EUS operators are competent.

It is imperative that training curricula and certification methods are developed systematically and are supported by high-quality scientific evidence. Medical educational frameworks such as Kern's six-step approach to curriculum development can aid in the systematic development of structured training programs.³ The first step is to identify and specify the educational needs, and traditionally, this has been done locally and somewhat unstructured, enunciating a variation in training across geographical locations. This problem is addressed in this special educational issue by Karstensen et al., who initiated an international needs assessment process to identify interpretational capabilities and technical skills to include in a basic curriculum for EUS fellows.⁴ Key opinion leaders representing 25 countries prioritized and reached a broad consensus on 29 EUS interpretational skills and 12 technical skills to include. This study is key to achieve a focused and structured curricular content for fellows in endosonography. The involvement of a panel of international experts also signals immense
support to harmonize training not only in one country but also across borders.

The need for structured training and certification is exemplified in a survey involving EUS operators from 16 hospitals in eight Chinese cities.[6] This study by Hou et al. explored EUS training in the past and present as well as the perceived future needs to ensure that young doctors acquire the necessary EUS skills and competencies to independently care for their patients. The invited key opinion leaders supported the need for a shift toward structured simulation-based training followed by certification based on standardized assessment of competence. However, the main ordeal remains the absence of simulation-based equipment that facilitates the achievement of educational goals and objectives. In this issue, Svendsen and Achiam narrate a philosophical take on choosing the right medical simulator-answering the questions “when to make,” “how to make,” and “what does it entail.”[6] This is an entertaining and important read, coming from an engineering point of view, and detailing important aspects to consider when developing simulation equipment-be it low cost or more advanced equipment such as virtual reality simulators. The authors hint on what clinicians and medical educators should ask for when requesting for equipment. The choice of words to use (the meanings being different in medicine and engineering) and focus on well-defined needs and the goals and objectives (is it for learning, assessment, or both?). If these are purposely defined, even the simplest simulation equipment can enable perfection of performance.

Efficient simulation-based training is not only possible on phantoms or computer-based virtual reality equipment but also animal models. In this issue, Sosa-Valencia et al. describe a new training model which they designed and validated for use during an international therapeutic EUS course (ITEC), which aimed to teach experienced interventional endoscopists how to perform therapeutic EUS.[7] This included didactic courses and a live animal model that provided a high-fidelity hands-on experience during a 3-day program. The High-Fidelity Simulated Live Animal Model was highly evaluated and was recommended by the participants as a way to introduce new procedures or improve on previous ones. The authors recommend that this complex training curriculum is offered to endoscopists who are well-experienced in endoscopic retrograde cholangiopancreatography and EUS.

The development of evidence-based training programs following a structured approach is resource-intensive but should be mindfully followed, especially if we have the Utstein Formula in mind and aim for improved educational efficiency to complement the other two factors-medical science and local implementation-to achieve maximum efficacy and safety for EUS patient (i.e., “survival”). Nayahangan et al. exemplify this with a comprehensive simulation-based training curriculum in transesophageal ultrasound with the use of the EBUS-endoscope (EUS-B).[8] This descriptive educational article describes the development of a structured training program following Kern’s six-step approach and combining EUS-B-FNA with the already well-established training and certification program for EBUS-transbronchial needle aspiration (TBNA). It includes a theoretical course to achieve foundational knowledge, followed by simulation-based training until mastery standards are met and supervised clinical apprenticeship. Most importantly, mandatory objective assessments must be passed before the trainees are allowed to proceed in the program and ultimately be certified.

All doctors strive to diagnose and treat patients according to the best available scientific evidence. Similarly, we should aim to base training and assessment of trainees on solid evidence. We hope that you will enjoy reading this special edition of the EUS Journal focused on education and be inspired to join the continued quest of ensuring that tomorrow’s EUS operators will be even better than today’s.

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