

## WHITE PAPER

## Best live endoscopy practices: an ASGE white paper

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Events that demonstrate endoscopic techniques in real time, termed live endoscopy courses, provide invaluable lessons from real-life situations, advances in endoscopic techniques and practices, and the opportunity to demonstrate standards of care. Attendees learn the thought process involved in making decisions while a procedure is being performed. Live endoscopy courses also provide a unique insight into technologies and techniques that may benefit those in the community as well as in academic practice.

Live endoscopy courses provide an opportunity to learn complex decision-making skills during endoscopic procedures in real time. Although training with prerecorded endoscopic videos can help simulate this experience, it cannot re-create some of the real-life factors that affect endoscopic care and decision making, including, but not limited to, the time-sensitive nature of certain techniques and decisions and unpredictable patient, healthcare provider, and/or endoscopic device issues. In addition, prerecorded endoscopic videos used for training are often edited, causing the learning experience to be an altered version of real life.

The American Society for Gastrointestinal Endoscopy (ASGE), similarly to other GI endoscopy societies,<sup>1</sup> plays a pivotal role in organizing, conducting, and endorsing live endoscopy courses. The ASGE emphasizes that live demonstrations must be conducted with the patient as the first priority. With the surge in live endoscopy courses conducted in person or virtually and across multiple centers, the ASGE Governing Board commissioned an expert panel to revise the previous guidelines published by the ASGE.<sup>2-5</sup>

## AIMS AND SCOPE

The aim of this document is to offer recommendations addressing key issues related to live endoscopy courses. The following questions were considered: 1) endoscopist-, patient-, procedure-, and attendee-related concerns,

2) patient outcomes, 3) legal issues related to live endoscopy courses, 4) the value of a patient advocate, and 5) ethical issues and issues related to management of conflicts of interest and quality control.

## Overview, panel composition, and conflicts of interest management

The topics were conceptualized by the authors of the document, the ASGE Education Council, and approved by the ASGE Governing Board. The panel composition consisted of content experts (expertise in conducting live endoscopy courses and endoscopy education), members of the ASGE Education Council, legal experts, and nursing staff. All members were asked to disclose conflicts of interest based on the ASGE policy: <https://www.asge.org/forms/conflict-of-interest-disclosure> and <https://www.asge.org/docs/default-source/about-asge/mission-andgovernance/asge-conflict-of-interest-and-disclosure-policy.pdf>. The recommendations were drafted by the panel during a virtual meeting on January 9, 2022. This document was approved by the ASGE Governing Board in July 2022.

## Quality of evidence and considerations in the development of recommendations

The strength of a recommendation reflects the extent to which the panel is confident that the desirable effects of an intervention outweigh the undesirable effects, or vice versa, across the range of patients for whom the recommendation is intended. This document was based on a systematic review of the available literature for the pertinent clinical questions. Given that no outcomes data addressing the impact of live endoscopy course participation were identified, the panel decided to provide 2 categories of recommendations: should or may. The main factor that drove this categorization was the impact of the intervention on patient benefits and harms, patient preferences, and patient outcomes. The final wording of the statements (direction, remarks, qualifications) was decided by consensus

and was approved by all members of the panel, the ASGE Educational Council, and the ASGE governing board.

## CONCERNS WITH LIVE ENDOSCOPY COURSES

Concerns with live endoscopy courses may be related to the endoscopist, patient, procedure, course setup, and attendee. Every effort to minimize risks to patients during a live endoscopy course must be considered, and evaluating these concerns can help mitigate overall risk.<sup>2,6</sup>

### Endoscopist-related concerns

Live endoscopy courses present an exciting forum for experts to demonstrate endoscopic best practices and innovation. It is essential that the endoscopist performing the procedure is comfortable, is experienced, and has the necessary expertise in the procedure being demonstrated. The procedure should be the standard of care and should be in the patient's best interest rather than an avenue for demonstrating a new technique or device. On occasion, visiting endoscopists may bring different points of view and skills from various areas of the world. However, visiting faculty may not be familiar with local room setup, available devices, and experience level of the supporting staff. It is crucial to ensure that the endoscopist is familiar with the patient and procedure details and is accustomed to or has been introduced to the staff in the room. There are additional auditory, visual, and physical distractions during a live course: the presence of lights, cameras, and extra personnel in a warmer-than-usual procedure room in addition to time/production pressure can cause heightened stress on the endoscopist and procedure room staff. The need for constant communication with the in-room staff, the moderator, and the expert panel while simultaneously answering questions from the audience can lead to added stress on the endoscopist; this may be mitigated by having a second expert in the room to help interface with the moderator and audience.

### Patient-related concerns

The plan for endoscopy, sedation, and the procedure to be demonstrated should be discussed with the patient. The patient's understanding of the risks and benefits of participation in a live endoscopy course may be limited. These should be explicitly discussed with the patient in advance of the procedure, to provide the patient enough time to weigh the pros and cons and to make an informed decision about participation. The patient's introduction to the expert endoscopist performing the procedure (if not done before the course) can help establish a physician-patient relationship. A separate consent for participating in a live endoscopy course should be obtained in addition to the standard institutional procedure consent (addressed in detail under Legal Issues Pertaining to Live Endoscopy). A plan must be in place to ensure that patient healthcare

information is removed from all video feeds. Live course procedures could be longer than usual owing to teaching elements and room switching involved with multiple procedures being performed and transmitted simultaneously. The course director/organizing committee should ensure that patients selected for live procedures are appropriate and that the possibility of prolonged sedation will not cause any detrimental outcome. Postprocedure follow-up/aftercare may not be ideal if the organizers are busy with the course or are not familiar with the techniques performed and do not have experience in appropriate aftercare, especially if the visiting endoscopist has departed at the completion of the course. Assuring that there is a local team to follow up the patient with a proper sign-out is important.

### Procedure-related concerns

A theoretical concern exists that live courses could be associated with higher adverse event rates; however, there are insufficient data to support this. In a study comparing endoscopic retrograde cholangiopancreatography (ERCP) outcomes in 168 live endoscopy workshop patients with 168 control patients, it was reported that ERCP was delayed in 18 patients to allow treatment during the live endoscopy courses.<sup>6</sup> General anesthesia was used in 87.5% of the workshop patients, in comparison with 44% of the control patients ( $P < .001$ ). There was no difference in the duration of the endoscopies or radiation exposure. No significant difference was found in the endoscopic treatments with the exception of cholangiopancreatotomy, which was performed in 7% in the workshop group versus 0% in the control group ( $P < .01$ ). The success and adverse event rates were similar in the workshop and control patients, as was the duration of hospitalization. Forty-five percent of the patients from the workshop group benefited financially because they were not charged for stents or other devices. Nonetheless, it seems that the rate of use of general anesthesia and the length of procedural times may be higher during live endoscopic procedures.

### Attendee-related concerns

The live endoscopy course should foster audience engagement and participation; this can be challenging to ensure when simultaneous rooms are being transmitted. Audience members may experience fatigue and disengagement. Moderators should present the case, patient history, the rationale for the demonstrated procedure, factors leading up to the procedure/device being showcased, the potential adverse events, and after-care as part of the course discussions. Without these aspects, the audience may not feel invested in the case. Adverse events and risks should be highlighted so that the audience members watching complex procedures do not have a false sense of ease while watching experts perform difficult maneuvers. Case selection may not entirely reflect the participants' practice; however, having a balanced mix of not

only esoteric cases or those featuring cutting-edge, infrequently performed techniques but also those that the audience members may encounter in practice should be the goal. Time should be allocated after live broadcast segments for panel commentary on key take-home lessons from the observed cases.

## PATIENT OUTCOMES

Early data regarding ERCP outcomes during live endoscopy reveal variable results regarding differences in outcomes, with a European study demonstrating no differences in success rates or adverse event rates,<sup>7</sup> whereas a large Asian study suggested that there was lower success when ERCPs were performed during live demonstrations compared with routine procedures.<sup>7,8</sup> A later study demonstrated that when stratified into procedural complexity, there were lower success rates with higher-complexity ERCPs than with controls.<sup>9</sup> This study also demonstrated increased use of general anesthesia associated with live demonstrations.

One recent study looked at outcomes of endoscopic submucosal dissection (ESD) procedures performed during a live endoscopy event in Germany as compared with routine standard ESD procedures performed at the same institution.<sup>10</sup> Thirty-eight live ESD procedures were compared with 38 matched routine ESDs. En bloc and curative resection rates in the live group and in the control group were 100% versus 87% and 84% versus 71%, respectively, whereas procedure times were 135 and 125 minutes, respectively. Noninferiority was demonstrated for resection rates and procedure times. The adverse event rate was lower in the live group than in the control group (5% vs 13%), and propofol sedation was similar in both groups (863 mg vs 872 mg). Recurrence and 5-year survival rates for both groups were 4% versus 0% and 70% versus 65%, respectively. This study demonstrated that the resection rate and procedure time of ESD during live endoscopy courses were noninferior to those of routine ESD procedures.

More recent data are described in the surgical literature with respect to live urologic surgery demonstrations. In a study that included 224 cases over 12 years, the adverse event rate was 11.6%, which was deemed to be not higher than rates of similar procedural results in the published literature.<sup>5</sup> Similar case-control comparison studies of live demonstrations in urology showed that the adverse event rates were similar to, or lower than, those in controls.<sup>4,11</sup>

Given limitations such as the lack of standardized definitions for success, prospective studies are needed to truly demonstrate whether live endoscopy courses may carry any particular or additional risk or benefit to the patient.

## FROM CONCEPT TO COURSE: THE NUTS AND BOLTS OF A SUCCESSFUL LIVE ENDOSCOPY COURSE

### Course planning and infrastructure

The primary objective of a live endoscopy event is to demonstrate the best endoscopic practices that can improve patient outcomes. Planning and infrastructure development often begins at least 1 year before the event. A comprehensive approach to identify the course objectives, intended audience, faculty, curriculum, format, and output is essential for a successful live event.

**Defining a successful live event.** The success of a live endoscopy event goes well beyond the performance of a case, having the most desirable faculty, or the final attendance numbers. The measure of a successful course is best identified by the impact the event makes on the attendees. As such, it is critical to tailor the course format and content to match the audience you have chosen to reach. As one plans an endoscopy event it is important to take the time and identify the objectives for the course and the intended audience, and ensure these both align.<sup>2</sup>

**Identifying and assembling the live endoscopy event team.** Once the desired audience and objectives for a course are identified, the next step is assembling a planning team early on. The team should include these members:<sup>1</sup>

1. **Course directors:** These should generally be 2 or 3 individuals who will be integrally involved with the course and have a vested interest in its success. Thought should be invested to ensure equity and bandwidth of the individuals selected. It is important to note that course directors are not limited to physicians, inasmuch as nurses and advanced practice providers can sometimes add significant value in this role depending on the course objectives and audience.
  - a. Course details: The course directors will work with the planning committee to identify the date(s) of the event, the format (lectures, panel discussions, and live endoscopy cases), and the venue.
  - b. Course date: It is important to identify a date(s) that will facilitate the greatest attendance. Care should be taken to avoid other key societal courses (eg, Digestive Disease Week), holidays, and times of slow attendance (eg, spring break).
  - c. Venue: Identification of a venue that can accommodate a live endoscopy event is critical. The team should ensure that the event is comfortable, is accommodating, and has the resources to handle all of the audiovisual needs.
2. **Planning committee:** This committee includes those individuals who will ultimately be the “boots on the ground.” This group generally consists of 3 to 5 people who will be tasked with many of the operational aspects of a live event that make it flow smoothly and ensure an

outstanding event for attendees and faculty. This group may range from department/hospital administrators, divisional administrators, program coordinators, continuing medical education (CME) planners, and interns to volunteers. This committee will be tasked with the following responsibilities:

- a. Identifying and confirming all venue-related factors (eg, rooms, audiovisual [AV] supplies, catering) and the liaisons between the venue and the course directors.
  - b. Inviting faculty, moderators, and coordinating with the marketing team to ensure alignment between distributed content and confirmed course faculty.
  - c. Serving as a liaison between the course directors and the AV team. The planning committee will handle basic issues but would escalate any significant concerns to the course directors.
  - d. Vendor coordination. The planning committee will be the team working with course sponsors/vendors. They will assist in applying, procuring, and handling all unrestricted educational grants. They will also serve to engage with the industry to direct them to booths and provide instruction about their roles in the event.
  - e. Continuing medical education (CME)/maintenance of certification (MOC) accreditation. The CME planners will take on this task and work with the course directors to ensure that all CME/MOC regulations and requirements are satisfied. They will also work with registrants to claim appropriate credits.
  - f. Week-of-event coordination. This team will be physically present to ensure that all faculty-related travel, hotel, and needs at the course are addressed. In addition, they will provide day-of direction to registrants, handle on-site registration, and distribute any materials that are needed.
  - g. Day of the event. The planning committee will be the one-stop shop for all questions that may arise from faculty, vendors, and registrants. They are the ultimate concierge for a live endoscopy event and should be equipped for arising problems and questions. In addition, they will help escort faculty or registrants who may need to be in different locations as part of the course.
  - h. Postevent feedback. The planning committee will also be tasked to solicit feedback, generally via surveys, from the registrants and faculty. These data will help improve future courses.
3. **Audiovisual (AV) team:** Perhaps the most important aspect of a live endoscopy event is the AV team. The AV team is generally a third-party group hired by the planning committee or the venue itself. Before the selection of the AV team, the course directors should meet with the potential group and ensure that all of their goals are within the skill set of this team. An effective AV team should be able to
- a. Provide transmission of live endoscopy to the venues, including seamless transitions between

endoscopy rooms, presentations, and other course activities.

- b. Ensure that there is precision 2-way audio between the conference room and the endoscopy suite. All members of the endoscopy team, AV team, and conference room support team should be able to hear the live audio feed at all times.
  - c. Manage all essential in-conference room needs, including cameras, microphones (speakers, audience, and panels), and podium-related computer needs (eg, switching between laptops).
  - d. Manage all essential in-endoscopy suite needs, including coordination of in-room cameras; transitions between cases, lectures, and presentations; and working with moderators as they transition to ensure no interruption in audio communication.
  - e. Troubleshoot any AV needs that occur in the conference room or the endoscopy suite. Often this requires the inclusion of 1 additional runner for the AV team who can keep abreast of issues as they arise to allow the AV team to address them efficiently and effectively.
4. **Event coordinators:** The planning committee should identify the following leaders for the course who will be in constant communication and be tasked to make the final decisions around course flow. They include the following:
- a. Endoscopy suite coordinator: This is usually a nurse or trainee whose only job is to ensure that case transition is smooth and patients and anesthesia support are ready, and to communicate with the endoscopists, staff, and in-room moderators.
  - b. Conference room coordinator: This again is usually a trainee or administrative coordinator whose job is to identify any issues that occur in the conference room and address them or communicate them to the resource person who can fix them. These issues include audio and video concerns, faculty presentations, and course flow.
  - c. AV coordinator: There should be 1 lead AV person who will be in the communication loop to ensure that all av transitions are smooth and to be the point person for any audio or video needs that arise.
  - d. The runner: This is a supplementary individual who will be mobile between the conference room and endoscopy laboratory and will be able to facilitate any needs or concerns between the venue and the endoscopy suite.

### Planning the Course: Format, Agenda, and Selecting Faculty

**Course agenda.** The course agenda should be geared toward the intended audience and be created to that all course objectives are addressed. The agenda is created by the course directors with input from the planning committee to optimize session lengths, networking breaks, and



other logistic aspects that will ensure an excellent overall experience for all registrants. If the course is part of a series, care should be taken to develop a full curriculum that will be covered once the series is completed. This concept will ensure that you retain registrants and optimize events over the live endoscopy series. Planning for adequate breaks (number and length) is essential to allow registrants and faculty to stay fresh, network with each other, and engage with your supporting vendors. Adequate break time also ensures that a proper amount of time is reserved for room turnover between cases.

**Course format.** The formats for a live endoscopy course can vary significantly. First, it is important to determine whether the course will be entirely in person or virtual. In the era of the COVID-19 pandemic, many courses have continued to be successful in a virtual format with live cases or even recorded live cases, which are then reviewed by a live panel. A virtual endoscopy course will require substantially less planning than an in-person live event but not allow for the networking and vendor engagement that may be desired. In addition, the format of the agenda should be considered carefully to match the objectives and audience. As a part of this, it is important to identify whether the course is strictly for practicing endoscopists or might benefit from separate breakout sessions for trainees, nurses, or even industry representatives. A thoughtful split of live endoscopy time, didactics, panel discussions, debates, or other formats is essential to the success of the event. With that said, most attendees at a live endoscopy course are there for just that. Ensuring the mix of cases matches the audience and provides as much of a realworld experience as possible will increase the registrants' satisfaction and engagement with the event.<sup>1</sup>

**Course faculty and moderators.** The course faculty may consist of local and visiting experts, some of whom will actually perform live endoscopy. The directors should balance the notoriety of having a "big name" visiting faculty versus using a rising internal star who would benefit most from such a spotlight. In addition, although most endoscopy events have shifted away from allowing visiting faculty to perform live endoscopy, some courses continue to showcase cases performed by outside physicians. This pathway requires significantly greater effort and more legal implications, and it carries a host of ethical concerns that should be discussed early with the planning committee and leadership. The selection of faculty who are not only good endoscopists but good speakers and thoughtful moderators is important for the course's success. It is advisable to have 2 or 3 faculty who have a strong experience with live courses who can serve as advocates when and if any problems do arise. Identification of faculty who can serve as in-room moderators is critical. In-room moderators serve as an extension of the endoscopist by taking the lead in the room, diversifying the case discussion with the audience, and allowing the endoscopist to focus on

the performance of the case. Finally, it is important to clearly delineate roles for all faculty: when they will speak, moderate, and perform endoscopy (if applicable) to ensure that the event flows smoothly and efficiently.

**Diversity, equity, and inclusion.** A successful course not only satisfies its objectives but does so while maintaining a keen eye for diversity and equity. These tenets should be considered not only for course faculty and moderators but also for all of the live endoscopy team. Diversity in gender, race, background, roles, and experience all adds to the flavor of a live endoscopy event and ensures that the team can put forth the best experience for registrants. Furthermore, course directors should avoid the implicit habit of selecting the same faculty each year as opposed to providing an opportunity to new and junior faculty who can also provide the expertise with a fresh outlook.

**Live endoscopy case selection.** Selected cases should directly correlate with the course learning objectives and should be limited to those for which available equipment and endoscopist and staff experience are present. Should local expertise or necessary equipment not be present, consideration of live transmission from another site or using a recorded case from a center with endoscopist/staff experience should be considered. The selected case types and number should reflect the composition and experience of the audience and the intended aims of the course as defined in the aforementioned learning objectives. Pre-recorded cases, often done with minimal to no editing to better mimic live cases, can also be used and discussed "live" by the course faculty. Using such an approach and integrating it with live cases provides an excellent option to provide similar educational benefits while also ensuring that the demonstration fits within the required time limits.

**Integration of industry and innovation during live endoscopy.** Industry partners play a major role in providing financial support and advertising live endoscopy courses. In addition, they typically supply technical equipment and professional support for novel technologies and techniques demonstrated during the event. The course organizers should meet with the industry partners before the course to discuss the planned cases and uses of technology so that the appropriate training occurs before the course and the necessary equipment and support are present during the course. The use of technology is a decision that should be made by the course organizers and not influenced by industry. When a technology/technique is to be demonstrated, it is essential that the endoscopist and the local endoscopy team be familiar with the use of the device. Prior use of and familiarity with the equipment are strongly preferred, but in cases where a device is new, appropriate preprocedure training for both the endoscopist and the local team is essential. The equipment should have a direct benefit to the patient and should not be used simply to showcase the technology. The course patient advocate should be consulted if there is uncertainty

regarding the clinical benefit of a device/technique. During the procedure, the endoscopist and moderators should explain the rationale for use of the equipment while discussing potential alternatives when the device is unavailable. Although highlighted equipment may predominantly be obtained from course sponsors, there should be no hesitancy to use any device, regardless of manufacturer, that would maximize clinical efficacy or patient safety.

### Live case transmission

1. **High-quality video feed:** A high-quality video feed is essential for the success of a live endoscopy course. Detailed discussions with the AV team and course directors are important to ensure that no detail is missed around video transmission. Integral to a high-quality video feed are these factors:
  - a. Clarity of all video sources to the registrants (conference room).
  - b. Ensuring seamless transition between video inputs and clarity for the audience without delay (eg, endoscopy, fluoroscopy, ultrasound, cholangioscopy). The AV team should be clear about the preferred display for all feeds (eg, single screen, quad screen, picture-in-picture).
  - c. In-room camera(s): Integration of the endoscopy feed and in-room camera adds complexity but is essential for live cases. The AV team should have clarity as to exactly when you would like the focus to be on the in-room camera versus the endoscopy feed. To this end, having an endoscopist assist the AV team in this regard is essential. This may include choosing what cases to show and when, ensuring that all views from each room are visible to the audience, asking the team to zoom in or out, and alerting the team to break away in the event of an unexpected outcome. It is important to highlight new devices and innovation close up before they are used in a live case, to demonstrate nursing techniques and tricks, and to focus in on the endoscopists' hands for procedures where this may provide insight to the audience. While the in-room camera is on, the endoscopy feed should also be shown in a smaller or side-by-side window.
2. **Audio feed:** As important as a crisp video feed is, it is more important to have an even crisper audio feed to the conference room and back to the endoscopist/moderators. All microphones and audio transmissions should be tested well before the course to ensure no excessive feedback or dropped audio. The course directors should spend some time on this with the AV team to identify optimal microphones for each participant, panelist, moderator, and speaker.
3. **Testing—the “dress rehearsal”:** While the majority of the focus in the week up to the live endoscopy event will be on the cases, patients, registrants, and faculty, nothing beats a dress rehearsal. The individual testing the AV team may do periodically for video and audio does not compare with a full dress rehearsal. This should include a live case being performed and transmitted to the venue where the registrants will be on the day of the event. It should also test all transitions (eg, video transmission between rooms, lecture to live case) that are planned during the course.
4. **Internal communication:** As the event approaches there should be a few live internal communication pathways established for the flow of the course and immediate ability to address a problem that may arise. These include the following:
  - a. Course flow: The endoscopy suite coordinator, AV lead, runner, and conference room leader should be always in live audio contact. Audibles are routinely called during a live endoscopy course, and these 4 critical leaders must be in the know to ensure that all parties are informed and the flow continues smoothly.
  - b. Course directors and course faculty: This is generally a text stream (eg, What's App) that allows the faculty and course directors to communicate in real time and to address course content and agenda concerns. It also will ensure that you can contact faculty at any time if they are not present before their presentation, endoscopy, or moderation.
5. **In-room case expert for case moderation:** The in-room moderator should be familiar with the case history, procedure indications, objectives, and planned procedural details. Ideally, the endoscopist, in-room expert, and endoscopy team should outline the steps of the planned procedure and key demonstration and discussion points before going on camera. Given the need for the endoscopist to focus on the technical aspects of the procedure, the in-room moderator can play a valuable role in discussing additional technical procedural points not mentioned by the endoscopist, alternatives to the demonstrated approach, and potential adverse events and their management.
6. **Tips to be an excellent live endoscopist:** Performing endoscopy live is challenging, and becoming a seasoned “live endoscopist” requires considerable skill and experience. The primary focus of the endoscopist should always be on the patient, and discussion of the procedure or conversing with the moderators should be suspended if it is thought to potentially compromise patient safety. Care should be taken to speak slowly and clearly and, when possible, describe the technical steps before and/or as they are happening to maximize attendee comprehension. Ideally, tips to benefit those who are novices to the procedure should be shared and discussed with in-room and panel moderators. Similarly, a discussion of common technical mistakes as well as a discussion of potential adverse events and how to avoid and manage them should ideally be reviewed. Finally, the endoscopist should be aware of the allotted

broadcast time so as to plan out the procedure to allow for all key components to be demonstrated and discussed.

## VALUE OF A PATIENT ADVOCATE

The inclusion of a patient advocate in live endoscopy courses is an indispensable component to ensure patient safety and confidentiality during live endoscopy events. The patient advocate is an independent endoscopy clinician with extensive experience in endoscopy and no conflict of interest. As a neutral party the patient advocate is designated before the start of the course and is not involved with course directorship.

Patient advocate responsibilities are essential, requiring involvement before and during the live endoscopy course. The patient advocate will assure that appropriate documentation including history, physical examination, and informed consent are completed per institutional standards before the start of any case. The patient advocate will remain present during the course and procedures and will monitor and assess compliance with the goals of patient anonymity and safety. He/she will also ensure that procedural standards of care are maintained for all live procedures. If there are breaches in patient confidentiality or conflicts of interest, the patient advocate will present them to the course director. The patient advocate will also gather data for course evaluation and patient outcomes. Any concerns about patient confidentiality, conflicts of interest, or unexpected outcomes will be debriefed with the course director at the course completion.

## LEGAL ISSUES PERTAINING TO LIVE ENDOSCOPY

In conducting live endoscopy demonstrations, there are legal issues that need to be addressed by the organizing committee, participating endoscopists, and/or the sponsoring bodies.

### Informed consent

The legal requirements for patient informed consent to medical procedures vary from state to state within the United States. Although most physicians are familiar with the consent processes required in their jurisdictions for performing endoscopic procedures, when conducting live endoscopy demonstrations, the procedural informed consent process should be modified to include any additional members of the endoscopy team involved in the procedure, especially any external faculty, the risks and benefits of the live endoscopy, and alternatives to the live procedures.

In addition to the consent for the procedure, a separate consent should be obtained for the live transmission,

recording, and/or broadcasting of the procedure. This consent should inform the patient of the following:

1. The purpose of the live endoscopy procedure
2. The intended audience and the size of the audience
3. Ownership/copyright of the recording if required
4. The voluntary nature and patient's right to withdraw consent before the procedure and for live transmission
5. Whether the patient will be allowed to review and/or edit the recording before broadcast
6. The permanent nature of the recording once broadcast/live streamed
7. The greater potential for unintended disclosure of confidential information/protected health information

Individuals responsible for conducting live endoscopy demonstrations should be familiar with the consent requirements specific to their jurisdictions to ensure compliance with local institutional and state medical board specifications.

### Confidentiality and privacy

The performance of live endoscopy demonstrations raises confidentiality and privacy concerns that must be taken into serious consideration. In addition to the federal Health Insurance Portability and Accountability Act of 1996 (HIPAA), states also have their own patient confidentiality and privacy laws. Such state laws vary by jurisdiction, and it is the responsibility of those organizing and participating in live endoscopy demonstrations to be familiar with these laws where the procedure/live endoscopy course is being performed.

Regarding HIPAA, if a patient's identity or any of a patient's protected health information (PHI) might be disclosed, the patient's prior authorization is required.

If there is a perceived increased potential of an inadvertent disclosure during a live or streamed demonstration, a good practice would be to obtain a release in advance. For example, the visibility of a patient's scars, moles, tattoos, or other unique physical characteristics combined with their age, gender, and the location of the procedure could arguably constitute a disclosure of identifiable PHI for which prior authorization may be required.

Additionally, if other individuals, for example filming crew involved with the live transmission and broadcast, have access to the patient or PHI, a business associate agreement should be entered to ensure that such individuals safeguard the PHI, use the PHI only for the purposes set forth in the business associate agreement (BAA), and, to the extent possible, destroy the PHI upon completion.

### Insurance

Endoscopists performing procedures during the live endoscopy course at their own institution should

communicate with their insurance carriers to ensure that their professional liability insurance includes coverage for live, streamed, and/or recorded demonstrations. If a policy does not include such coverage, it is unlikely the insurer took into consideration the associated risks when determining premium rates and may take the position that there is no coverage for these procedures. Similarly, some policies provide coverage only for performing procedures at locations listed in the policy. If a procedure is being performed by visiting faculty outside of their institution, then the local organizing committee should ensure that adequate malpractice coverage is provided to the endoscopist.

### Licensing and credentialing

For physicians performing or consulting on live endoscopy procedures in a state where they are not currently licensed, the local organizing committee should consult with the medical board of the state where the procedure will be performed to determine any licensure or other approvals that may be required. Failure to do so may result in the unlicensed practice of medicine and subject the physician to sanctions and deleterious consequences. Many states have exceptions to full licensure for physicians who are temporarily consulting or providing procedures for educational purposes.

Similarly, institutions wherein live endoscopy procedures are performed likely have requirements for credentialing external physicians to perform these procedures in the institution. Such requirements, and any exceptions, are often set forth in the institution's medical staff bylaws and related rules and regulations. The local organizing committee, external physicians, and the institution where procedures are to be performed should reference the credentialing requirements to ensure compliance.

### ETHICAL ISSUES, CONFLICTS OF INTEREST MANAGEMENT, AND QUALITY CONTROL

Several ethical issues need to be considered for the appropriate conduct of live endoscopy courses. All faculty members, including course directors, should disclose all personal and financial conflicts of interest before the live endoscopy course. It is the responsibility of the course director(s), organizing committee, and patient advocate to ensure that the reported conflicts of interest will not jeopardize patient safety. If required, the course director(s) may exclude the faculty member for a specific aspect of the course, a procedure, or the entire event. Congruent with the ASGE's goal of improving diversity, equity, and inclusion, the organizing committee should strive to reflect these goals and consider the adequate representation of underrepresented minorities on the organizing committee and faculty members. It is suggested that institutions orga-

nizing these events monitor these metrics periodically. The ASGE recognizes the important role of industry in the execution of high-quality live endoscopy courses, which includes financial support and provision of equipment and devices required to perform live endoscopy cases. Industry representatives may provide training for local staff regarding the use of devices that may be used during the live endoscopy course. However, industry representatives may not interfere with the educational goals of the course or be present in the endoscopy room during a live demonstration of the endoscopic procedure. Only individuals required for educational purposes should be present in the procedure room. It is suggested that all attempts should be made to refer to equipment with generic names, particularly when more than 1 device is suitable for the clinical task. However, when unavoidable or necessary for educational purposes, industry names and recognition may be appropriate. Company names and logos should be hidden from cameras as much as possible.

Patient satisfaction should be collected within a week of completion of the procedure ([Appendix A](#), available online at [www.giejournal.org](http://www.giejournal.org)). It is also suggested that patient outcome data should be collected on the day of the procedure, 48 to 72 hours after, and 30 days after the procedure ([Appendix B](#), available online at [www.giejournal.org](http://www.giejournal.org)). All patient, procedure, and follow-up outcome data for cases included in the live endoscopy course should be entered into a database and reviewed periodically. The organizing committee should specifically review all adverse events, conduct root-cause analysis as appropriate, and inform the faculty members of all adverse events and patient outcomes. Feedback from attendees should be obtained that focuses on the overall quality of the course (live cases and lectures delivered), selection of cases, the ability to interact with faculty members, any perceived bias or conflict of interest, and whether the learning objectives were achieved ([Appendix C](#), available online at [www.giejournal.org](http://www.giejournal.org)).

It is crucial to establish a prospective registry of cases performed during live endoscopy courses to assess critical outcomes such as technical and clinical success, adverse events, and patient satisfaction.

### LIVE ENDOSCOPY COURSES IN THE ERA OF THE COVID PANDEMIC

Coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus-2 led to a worldwide pandemic that started in early 2020. Healthcare systems around the world were affected, with a particular impact on procedure-related specialties. Suspected transmission risks associated with aerosolizing procedures resulted in the development of multiple national and international GI societies and practices to help endoscopy



centers adapt and facilitate precautions to keep staff and patients safe while re-establishing standard levels of endoscopic care.<sup>12-14</sup> The impact of the pandemic also had a significant disruption of endoscopic education caused by the cancellation of various endoscopy courses and annual scientific meetings. However, what emerged as a successful modality of education, meetings, and interaction during the pandemic was the explosive development of remote learning and online education platforms. This allowed not only for reaching a global audience but also for increasing the diversity of endoscopists and techniques from around the world without the expense and burdens of travel that were previously incurred. Advancements in streaming platforms and AV capabilities enhance interaction between moderators and endoscopists, in addition to the improved ability for audience members to communicate questions and comments.

This online revolution of live endoscopy also addresses concerns that have been expressed regarding the safety and efficacy of live demonstrations performed by visiting faculty who may be unfamiliar with the endoscopy unit equipment or have language barriers. By streaming cases performed by local faculty familiar with the individual units, this concern is mitigated. The pandemic did help the GI community across the world to come together and has led to the development of various online live endoscopy courses that are now available at the audience's fingertips.

## CONCLUSIONS

Live endoscopy courses provide an opportunity to learn complex decision-making skills during endoscopic procedures in real time. In this document, the ASGE offers guidance on topics regarding the conduct of live endoscopy courses. Concerns with live endoscopy courses may be related to the endoscopist, patient, procedure, course setup, and attendee. Every effort to minimize risks to patients during a live endoscopy course must be considered, and evaluating these concerns can help mitigate overall risk. Additional legal issues need to be addressed by the organizing committee, the participating endoscopists, and/or the sponsoring bodies. These include informed consent, confidentiality and privacy, and licensing and credentialing among others. Also, several ethical issues need to be considered for the appropriate conduct of live endoscopy courses, such as conflicts of interest, appropriate choice of patients and faculty, and proper interaction with industry. The inclusion of a patient advocate in live endoscopy courses is an indispensable component to ensure patient safety and confidentiality. Substantial preparatory work and infrastructure are needed to ensure that the course follows the above-detailed ethical and legal standards. A comprehensive approach to identify course objectives, intended audience, faculty, curriculum, format, and output is essential for a successful live event. This

Course objectives	The primary objective of a live endoscopy event <b>should</b> be to demonstrate the best endoscopic practices that can improve patient outcomes. A comprehensive approach to identify course objectives, intended audience, faculty, curriculum, format, and output is essential for a successful live event.
Course agenda	The course agenda <b>should</b> be geared toward the intended audience and be created to ensure that all course objectives are addressed. Developing learning objectives to define the course aims is critical to developing a meeting agenda and advertising to an appropriate audience. Cases selected for a live endoscopy event should directly correlate with the course learning objectives.
Course directors	2-3 Course directors <b>may</b> be identified who will be integrally involved with the course and have a vested interest in its success. Thought should be invested to ensure equity and bandwidth of the individuals selected.
Course faculty and moderators	The endoscopist performing the live procedure <b>should</b> have expertise in the procedure and have familiarity with the equipment, available devices, and supporting staff in the room.  Diversity in gender, race, background, roles, and experience of endoscopists and moderators <b>may</b> add to the flavor of a live endoscopy event and ensures that the team can put forth the best experience for registrants.
Case and technology selection	The use of a technology is a decision that <b>should</b> be made by the course organizers and not influenced by industry. When a technology/technique is to be demonstrated, it is essential that the endoscopist and the local endoscopy team be familiar with the use of the device.  The procedure demonstrated in the live course <b>should</b> be the least invasive option and in the best interest of the patient.
Live case transmission	A high-quality video and audio feed <b>should</b> be used and is essential for the success of a live endoscopy course. Detailed discussions with the audiovisual team and course directors are important to ensure that no element is missed around video transmission.  An in-room moderator <b>may</b> be assigned for all live cases to allow the endoscopist to focus on the technical aspects of the procedure. The in-room moderator can play a valuable role in discussing additional technical procedural points not mentioned by the endoscopist, alternatives to the demonstrated approach, and potential adverse events and their management.

(continued on the next page)

**Continued**

Patient consent and the advocate	<p>The risks and benefits of participation in a live endoscopy course <b>should</b> be explicitly discussed with the patient in advance of the procedure, to provide the patient enough time to weigh the pros and cons and make an informed decision about participation.</p> <p>A separate consent for participating in a live endoscopy course <b>should</b> be obtained in addition to the standard institutional procedure consent.</p> <p>A patient advocate <b>should</b> be included in the live endoscopy course to ensure patient safety and confidentiality during live endoscopy events. A patient advocate is an independent endoscopy clinician with extensive experience in endoscopy and no conflict of interest. As a neutral party, the patient advocate is designated before the start of the course and is not involved with course directorship.</p>
Ethics and disclosures	All faculty members <b>should</b> disclose all personal and financial conflicts of interest before the live endoscopy course. It is the responsibility of the course director(s), organizing committee, and patient advocate to ensure that the reported conflicts of interest do not jeopardize patient safety.
Follow-up and evaluation	Patient satisfaction, course evaluations, and outcomes surveys <b>may</b> be collected at predefined intervals after completion of the live endoscopy course.

document also highlights several knowledge gaps in this field specifically related to lack of data on meaningful outcomes among patients participating in live endoscopy courses. A prospective registry of cases performed during live endoscopy courses is crucial to assess critical outcomes such as technical and clinical success, adverse events, and patient satisfaction.

**A GUIDE TO BEST LIVE ENDOSCOPY PRACTICE**

This table represents a consultative process with the authors and other experts in the field of endoscopy and those who are active in conducting live endoscopy courses and education. At the time of publishing, this represents the best possible advice based on the data and experience of the group. We acknowledge that as more information is collected the current consensus of experts will need to be updated. There will be at least a biennial review of the document.

**DISCLOSURES**

*Dr. Khashab is a consultant for Boston Scientific Corporation, Olympus, Pentax, Medtronic and Apollo, received research support from Boston Scientific, and*

*receives royalties from UpToDate and Elsevier. Dr. Muthusamy is a consultant for Medtronic and Boston Scientific Corporation, receives research support from Boston Scientific Corporation, has stock options/equity in Capvision, and is on the Advisory Board for Endogastric Solutions and Motus GI. Dr. Aksbintala is a board member for Origin Endoscopy Inc., is a consultant for Dragonfly Endoscopy Inc., and has received educational grants from AbbVie, Boston Scientific Corporation, and Medtronic. Dr. Kothari is a consultant for Boston Scientific Corporation and Olympus, and is on the Advisory Board for Castle Biosciences. Dr. Sethi is a consultant for Boston Scientific Corporation, Fujifilm, Interscope, Medtronic, and Olympus; is on the Advisory Board for Endosound, EndoscopyNow, and Endoscopy on Air; is the Vice-Chair of the AGA Center for GI Innovation and Technology (CGIT), and is the president of Women in Endoscopy (WIE). Dr. Rastogi is a consultant for Boston Scientific Corporation, Cook Endoscopy, and Olympus, and has received a research grant from Olympus. Dr. Wani is a consultant for Exact Sciences and Castle Biosciences, and has received research support from Lucid, Ambu, and CDx Diagnostics. Dr. Komanduri is a consultant for BSC, Medtronic, and Castle Biosciences. The remaining authors disclosed no financial relationships.*

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*Abbreviations:* ASGE, American Society for Gastrointestinal Endoscopy; AV, audiovisual; BAA, business associate agreement; CME, continuing medical education; COVID-19, coronavirus disease 2019; ERCP, endoscopic retrograde cholangiopancreatography; ESD, endoscopic submucosal dissection; MOC, maintenance of certification; PH, protected health.

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## APPENDIX

## APPENDIX A. Postprocedure satisfaction assessment form for patients undergoing endoscopy procedures during live endoscopy courses

Postprocedure patient satisfaction. Please answer the questions below to rate your visit while participating in the live endoscopy course.					
	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree
I was provided sufficient information to prepare me for the live endoscopy course					
I felt that my questions and concerns were adequately addressed					
I had a reasonable wait time for the procedure					
I felt that care was taken to protect my privacy and confidentiality					
The care team spent adequate time with me after the procedure					
I was provided with clear instructions regarding postprocedure care and follow-up					
I felt confident with my treating team					
The care team was friendly and courteous					
I received appropriate postdischarge follow-up from the care team					



**APPENDIX B. Periprocedural data and outcomes of patients participating in a live endoscopy course**

Course name:								
Course directors details:								
Number of course participants:								
Number of patients:								
Patient advocate details:								
Preprocedure and intraprocedure data				Within 48-72 hours of course		Within 30 days of course		
Patient no.	Procedure Indication	Procedure performed	Technical success (Y/N)	Intraoperative AEs (use AE capture form)*	Follow-up performed (Y/N)	AEs (use AE capture form)*	Follow-up performed (Y/N)	AEs (use AE capture form)*
1.								
2.								
Please indicate the adverse events associated with the endoscopy procedure.								
Bleeding: <input type="checkbox"/> Yes <input type="checkbox"/> No Grade: <input type="checkbox"/> Mild <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/> Fatal Details including management.....								
Perforation: <input type="checkbox"/> Yes <input type="checkbox"/> No Grade: <input type="checkbox"/> Mild <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/> Fatal Details including management.....								
Pancreatitis: <input type="checkbox"/> Yes <input type="checkbox"/> No Grade: <input type="checkbox"/> Mild <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/> Fatal Details including management.....								
Other adverse event: <input type="checkbox"/> Yes <input type="checkbox"/> No Type of adverse event: Grade: <input type="checkbox"/> Mild <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/> Fatal Details including management.....								
Unplanned admission or evaluation in ED: <input type="checkbox"/> Yes <input type="checkbox"/> No Grade: <input type="checkbox"/> Mild <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/> Fatal Details including management.....								
Unplanned surgery: <input type="checkbox"/> Yes <input type="checkbox"/> No Grade: <input type="checkbox"/> Mild <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/> Fatal Details including management.....								
<b>Severity grading system (ASGE lexicon)</b>								
Procedure aborted (or not started) because of an adverse event – Mild								
Postprocedure medical consultation – Mild								
Unplanned anesthesia/ventilation support, ie, endotracheal intubation during conscious sedation – Moderate								
Temporary ventilation support by bagging or nasal airway during conscious sedation, and endotracheal intubation during a modified anesthesia care procedure are not adverse events								
Unplanned hospital admission or prolongation of hospital stay for ≤3 nights – Mild								
Unplanned admission or prolongation for 4-10 nights – Moderate								
Unplanned admission or prolongation for >10 nights – Severe								
ICU admission for 1 night – Moderate								
ICU admission >1 night – Severe								
Transfusion – Severe								
Repeated endoscopy for an adverse event – Moderate								
Interventional radiology for an adverse event – Moderate								
Interventional treatment for integument injuries – Moderate								
Surgery for an adverse event – Severe								
Permanent disability – Severe								
Death – Fatal								

\*Adverse event (AE) capture form

**APPENDIX C. Post-live endoscopy course evaluation for attendees**

Attendee's background and feedback on the overall quality of the course and if the learning objectives were met are obtained using evaluation forms. Below is an example of a post-live endoscopy evaluation form.

What is your profession?	<input type="checkbox"/> Gastroenterologist	<input type="checkbox"/> Clinical technician			
	<input type="checkbox"/> Surgeon	<input type="checkbox"/> Anesthesiologist			
	<input type="checkbox"/> Nurse practitioner	<input type="checkbox"/> Nurse anesthetist			
	<input type="checkbox"/> Registered nurse	<input type="checkbox"/> Other: _____			
	<input type="checkbox"/> Trainee				
Please indicate which sessions you attended (tick all that apply)	<input type="checkbox"/> Session 1 (eg, Diagnosis of GERD)				
	<input type="checkbox"/> Session 2 (eg, Endoscopic treatment of GERD)				
	<input type="checkbox"/> Session 3 (eg, Diagnosis of Barrett's esophagus and neoplasia)				
	<input type="checkbox"/> Session 4 (eg, Endoscopic treatment of Barrett's esophagus)				
Evaluation of the live endoscopy course					
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
The overall quality of this course was of a good standard					
There was no commercial bias in this course					
This course was based on the best scientific and rigorous evidence available					
This course improved my medical or practical knowledge					
This course improved my care attitudes					
This course improved my procedural or cognitive skills					
This course improved my practice behavior					
This course will improve my patients' clinical outcomes					
I will change my practice as a result of attending this course					
I would attend a similar course in the future					
I would recommend this course to a colleague					
The following learning objectives were met:					
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Learning objective 1 (eg, Be able to perform high-quality EGD in GERD and Barrett's esophagus patients)					
Learning objective 2 (eg, Discuss the use and application of ambulatory pH monitoring)					
Learning objective 3 (eg, Describe available endoscopic treatments for GERD)					
Learning objective 4 (eg, Discuss appropriate selection of endoscopic eradication therapy)					